DOCUMENT RESUME

ED 169 333 CE 020 518

AUTHOR	Sloan, Lee
TITLE	T & I--Sheet Metal. Kit No. 44. Instructor's Manual [and] Student Learning Activity Guide.
INSTITUTION	Clemson Univ., S.C. Vocational Education Media Center.; South Carolina State Dept. of Education, Columbia. Office of Vocational Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	78
GRANT	SC-5058-76-I-211-0330
NOTE	103p.; For related documents see CE 020 474-566
AVAILABLE FROM	Vocational Education Media Center, 10 Tillman Hall, Clemson University, Clemson, South Carolina 29631 (complete set of modules, 14 filmstrips and cassettes, $260.00; set of 87 student modules, $42.50)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Behavioral Objectives; Instructional Materials; *Learning Activities; *Learning Modules; Occupational Clusters; *Occupational Information; Prevocational Education; *Sheet Metal Work; *Trade and Industrial Education

ABSTRACT

An instructor's manual and student activity guide on sheet metal are provided in this set of prevocational education materials which focuses on the vocational area of trade and industry. (This set of materials is one of ninety-two prevocational education sets arranged around a cluster of seven vocational offerings: agriculture, home economics, distributive education, health occupations, world of work, trade and industry, and office occupations.) The instructor's guide includes the following elements: title of activity, duration of activity (eight to eleven periods), activity goals, instructional objectives for twelve occupations (order clerk, delivery person, medical equipment and supply representative, tool clerk, layout maker, sheet metal mechanic, sheet metal helper, painter, hand packager, safety inspector, sales representative, and shop supervisor), related vocational clusters, and activity implementation (description, materials needed, safety considerations, teacher preparation prior to class, during the class, and follow-up activities). The student activity guide, based on the construction of a metal first-aid kit, provides step-by-step instructions (narrative and illustrations) for completing each instructional objective. At the end of each set of instructions is a student check point (evaluation activity). Seven occupational descriptions (e.g., tool-crib attendant, sheet-metal worker) conclude the document. (JH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED169333

T & I – SHEET METAL

Kit No. 44

INSTRUCTOR'S MANUAL

Prepared by

Mr. Lee Sloan
Cherokee Area Vocational Center
Gaffney, South Carolina 29340

State Department of Education
Office of Vocational Education
Prevocational Education
Columbia, South Carolina 29201

In Cooperation With

Vocational Education Media Center
Clemson University
Clemson, South Carolina 29631

1978

CE 020 518

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Art Jensen

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

These materials have been developed from funds provided by Grant SC-5058-76-I-211-0330 under the Appalachian Regional Development Act Amendments of 1967, Department of Health, Education and Welfare, Office of Education.

TITLE OF ACTIVITY

Kit No. 44, T & I – Sheet Metal

DURATION

Main Activity – 5 to 6 class periods
Follow-up Activity – 3 to 5 class periods

GOALS

The purpose of this activity is to introduce to the students some of the skills needed in the sheet metal fabrication industry. Some of the skills explored are layout, cutting, bending, forming, fastening, and finishing. Other occupations related to the fabrication are also explored.

Individual activity goals are as follows:

ORDER CLERK: The student will develop a better understanding of the type of activities performed by an order clerk upon completion of this activity.

DELIVERYPERSON: Upon completion of this activity, the student will have gained some insight into the work of a deliveryperson.

MEDICAL EQUIPMENT & SUPPLIES REPRESENTATIVE: Upon completion of this activity, the student will be familiar with the type of supplies found in a first-aid kit.

TOOL CLERK: Upon completion of this activity, the student will have a better understanding of the importance of the tool-room clerk.

LAYOUT MAKER: Upon completion of this activity, the student will understand the importance of the layout maker's job and the various activities related to the layout of a pattern.

SHEET METAL MECHANIC: Upon completion of this activity, the student will have a knowledge of some of the skills necessary for sheet metal fabrication.

SHEET METAL SHOP HELPER: Upon completion of this activity, the student will have a knowledge of some of the skills necessary to be a sheet metal shop helper.

PAINTER: Upon completion of this activity, the student will have some understanding of the skills of a brush painter.

HAND PACKAGER: Upon completion of this activity, the student will have a better understanding of the activities of a hand packager.

SAFETY INSPECTOR: Upon completion of this activity, the student will have a better understanding of safe shop practices and better understand the job of a safety inspector.

SALES REPRESENTATIVE: The students will develop an understanding of the activities of sales representatives upon completion of this activity.

SHOP SUPERVISOR: The student will develop a better understanding of the activities of a shop supervisor upon completion of this activity.

INSTRUCTIONAL OBJECTIVES

Individual activity objectives are as follows:

ORDER CLERK
Instructional Objective I: The student will make a pad for ordering materials.
Instructional Objective II: The student will write orders for materials needed for this activity when the shop supervisor approves.
Instructional Objective III: The student will check each item received off the shop's order sheet.

DELIVERYPERSON
Instructional Objective I: The student will obtain the materials ordered.
Instructional Objective II: The student will deliver the materials ordered to the order clerk and proper departments.

MEDICAL EQUIP. & SUPPLIES REPRESENTATIVE
Instructional Objective I: The student will list 10 to 12 first-aid items that should be included in the first-aid kit.

TOOL CLERK
Instructional Objective I: The student will deliver equipment and tools to the proper work areas.
Instructional Objective II: The student will check the equipment off the lists as the workers turn it into the tool room.

LAYOUT MAKER
Instructional Objective I: The student will trace the metal pattern onto the construction paper.
Instructional Objective II: The student will draw in the fold lines and label the lines.

Instructional Objective III: The student will trace the master pattern onto the 28 gauge sheet metal.
Instructional Objective IV: The student will draw and label the fold lines.
Instructional Objective V: The student will clean up the work area.

SHEET METAL MECHANIC

Instructional Objective I: The student will cut, bend, shape, and construct a box from the paper layout.
Instructional Objective II: The student will cut the sheet metal layout from the sheet metal.
Instructional Objective III: The student will bend and shape the layout to form a double hem along the four sides, using the pan brake.
Instructional Objective IV: The student will punch holes in the flaps of the box where indicated.
Instructional Objective V: The student will shape and bend the sides of the layout into the shape of a box, using the pan brake.
Instructional Objective VI: The student will punch holes in the ends of the box.
Instructional Objective VII: The student will rivet the box together, using pop rivets and a pop rivet gun.

SHEET METAL SHOP HELPER

Instructional Objective I: The student will help cut, shape, and construct a box from the paper layout, following the sheet metal mechanic's directions.
Instructional Objective II: The student will assist the mechanic in cutting out the sheet metal layout.
Instructional Objective III: The student will assist in double hemming the side edges.
Instructional Objective IV: The student will assist in punching the holes in the metal layout.
Instructional Objective V: The student will assist in the shaping and bending of the sheet metal layout.
Instructional Objective VI: The student will assist in punching holes in the ends of the box.
Instructional Objective VII: The student will assist in riveting the box together.
Instructional Objective VIII: The student will clean up the work area and return all tools to the tool clerk.

PAINTER

Instructional Objective I: The student will paint the outside of the box white.
Instructional Objective II: The student will paint a red cross on the box's four sides.
Instructional Objective III: The student will clean up work area and return tools to the tool clerk.

HAND PACKAGER

Instructional Objective I: The student will package the first-aid items in the first-aid box.

SAFETY INSPECTOR

Instructional Objective I: The student will inspect each work area two or three times an hour for safety hazards.
Instructional Objective II: The student will write recommendations for correcting all unsafe conditions.

SALES REPRESENTATIVES

Instructional Objective I: The students will sell the activity first-aid kits produced.

SHOP SUPERVISOR

Instructional Objective I: Given the teacher's go-ahead, the student will check to see that each student has an activity card.
Instructional Objective II: The student will determine what materials will be needed and order them.
Instructional Objective III: The student will instruct the students to obtain the equipment and tools necessary to complete the activity.
Instructional Objective IV: The student will instruct the group as to the number of kits to be made and have each group secure the necessary materials from the order clerk or deliveryperson.
Instructional Objective V: The student will supervise all activities.
Instructional Objective VI: The student will supervise the work periods.
Instructional Objective VII: The student will inspect each step of the fabrication activity.

VOCATIONAL CLUSTERS

Trade and Industry
Distributive Education
Office Occupations
Health Occupations
World of Work

ACTIVITY IMPLEMENTATION

A. Activity Description

The class forms a company to make and supply first-aid kits. Three groups are utilized: supply, fabrication, and distribution. A shop supervisor controls the entire operation. Both medical and metal supplies are ordered. The fabrication group lays out the pattern, cuts, bends, forms, fastens, and finishes the kit. The distribution group delivers the supplies and sells the kits if more than one kit is produced.

B. Safety

1. Always notify the instructor immediately when you are injured in shop, no matter how slight the injury.
2. Safety goggles of an approved type should be worn at all times in the shop when working with metals or chemicals (paint).
3. Place oil rags or other combustible or inflammable wiping materials in the proper container.
4. Keep aisles and walkways clear of excess materials, scrap, or waste.
5. Return all tools to proper storage after use.
6. Operate machines only when authorized.
7. Avoid needless shouting, whistling, or horseplay in the shop.
8. Never touch metal that you expect is hot.
9. Use gloves to handle metal with sharp edges.
10. Do not lean on a machine when someone else is using it.
11. Sharp-edged tools should be carried with their points and cutting edges downward.
12. Always follow directions.

C. Materials Required

1. Audio Visual Equipment
   None
2. Technical Equipment
   2 small pan brakes
   10 scribers
   10 steel rules – 18" (45.7 cm)
   1 first-aid kit master pattern
   10 scissors
   10 tinner's snips
   10 ball peen hammers
   2 pop rivet guns
   2 hand seamers
   1 paper hole puncher
   2 Whitney No. 5 Jr. Hand Punches
   10 metal files (8" – 20.3 cm)
   10 screwdrivers
   Wood block (9 7/8" x 5 7/8" x 3" – 25.1 x 14.9 x 7.6 cm)
3. Expendable Materials
   Pencils
   Paper
   Carbon paper
   Construction paper
   Masking tape
   Red pen
   Blue pen
   Black pen
   28 gauge sheet metal
   Scotch tape
   Leather gloves
   Pop rivets
   Newspapers
   White paint
   Red paint
   Stir stick
   Paint thinner
   Rags
   Empty can
   First-aid items
   2½" paint brush (3.8 cm)
   ½" paint brush (1.27 cm)

D. Preparations Prior to Class

Obtain all of the necessary materials.

Choose the number of activity cards needed for your class from the masters. Variations in class size from 10 to 27 students may be made by either combining or increasing the number of jobs. The following diagram indicates the jobs that can be combined or increased:

SUPPLY:
- Order Clerk 1
- Tool Clerk 1-2
- Hand Packager 1

DISTRIBUTION
- Deliveryperson 1
- Med. Equip. & Supply Representative 1-2
- Sales Representative . . All class members

FABRICATION
- Shop Supervisor 1
- Layout Maker 1-4
- Sheet Metal Mechanic 1-6
- Sheet Metal Shop Helper 1-6
- Brush Painter 1-2
- Safety Inspector 1

*Set up the following work areas in appropriate locations:

Supply– Corner of class with several desks and chairs; place all materials and equipment in this area.

Distribution – several desks and chairs near the supply group will be adequate

Fabrication – the largest group divided into the following areas:

a. Shop Supervisor: needs a desk near the center of the activity
b. Layout Maker – needs to have a flat-top table
c. Sheet Metal Mechanic & Helper – work together in a location suitable to place the pan brake, preferably a small flat-top table that can hold the 150 lb. (68 kg) brake
d. Painter – the painter needs a clear space to work on the floor
e. Safety Inspector – needs a desk and chair near the shop supervisor's desk

***Place the placards on the appropriate desks or areas.

Material distribution will be taken care of by the student workers.

Choose the shop supervisor and allow him/her time to become familiar with the activity.

Set up the audio-visual materials.

E. During Class Session

Give a brief introduction to the activity.

Show the filmstrip (if using it).

Have the students select one of the activity cards. Have the students report back to the proper work area.

Explain the flow chart and how the activity will progress.

Inform the shop supervisor as to the type of first-aid kit being produced (for the shop, family car, home, etc.), and the number of kits to be made.

Explain that the shop supervisor will have control over the complete activity. The teacher's role will be that of an advisor.

Oversee the activity and give advice and assistance only when necessary.

F. Follow-up Activities

Select at least one of the follow-up activities. It is recommended that the first follow-up activity be used even if the other activities are not used. These activities should be assigned for the next class meeting following completion of the activity.

The follow-up activities are as follows:

a. Individual Activity
Using the "VIEW" series, the student will answer a series of questions, on a fact sheet, of an occupation related to the sheet metal industry. It is recommended that the student keep a notebook with sections 1 through 5. The students then can place the "VIEW" fact sheet in the appropriate section according to how they rated their interest in the occupation selected.

b. Group Activity
Individualized Activities – the students can utilize the skills and experience learned in the main activity to fabricate lids for the first-aid boxes. The instructions are included in the Masters for Duplication.

c. Group Activity
Arrange for the class to visit a local sheet metal shop (heating & A/C contractors, etc.) or a sheet metal shop in a vocational center.

d. Individual Activity
The students will make a list of items fabricated from sheet metal in their homes and in the school.

e. Group Activity
If funds and materials are available, students may decide to fabricate another simple project while the equipment is still at the school.

f. Individual Activity
Check the want ads in several large city papers for occupations related to the sheet metal industry. Cut these ads out and tape them to a sheet of paper. Post them for the whole class to see.

MASTERS FOR DUPLICATION

Instructions for follow-up activity "B"
VIEW Fact Sheet
Flow Chart
Activity Cards

INSTRUCTIONS FOR FOLLOW-UP ACTIVITY "B"

Construct a Box Lid

Generally speaking, the students will perform the same jobs as in the main activity. The following procedures should be used for this activity. *

Shop Supervisor – Announce the number of lids to be made
Supervise all activities
Perform the same type duties as in the main activity

Order Clerk – Obtain the proper materials for this project:
constructions paper, 28 gauge sheet metal, etc.

Tool Clerk – Deliver tools and equipment to work areas and maintain accurate list of who has what

Medical Supply Sales Representative – Assist the Layout Maker

Layout Maker – Lay out master pattern on construction paper, drawing in fold lines and labeling them. Lay out master pattern on sheet metal drawing in fold lines and label them.

Sheet Metal Mechanic – Fold the construction paper at line "A" to form a single hem. Tape it. Make a ninety degree or right angle bend (⌊) at line "B." Repeat for all four sides. Do the same operation for the sheet metal layout using the pan brake. Check to see if the lid fits the box.

Sheet Metal Shop Helper – Assists the sheet metal mechanic in all ways

Painter – Paint the lid white on the outside.
Paint a red cross on the box lid.

Hand Packager – Put the dry lids on the boxes.

Safety Inspector – Continue to check for safety hazards.

*Everyone is responsible for cleaning up the work areas and returning tools, materials, etc. to the proper place.

VIEW FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
1.
2.
3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

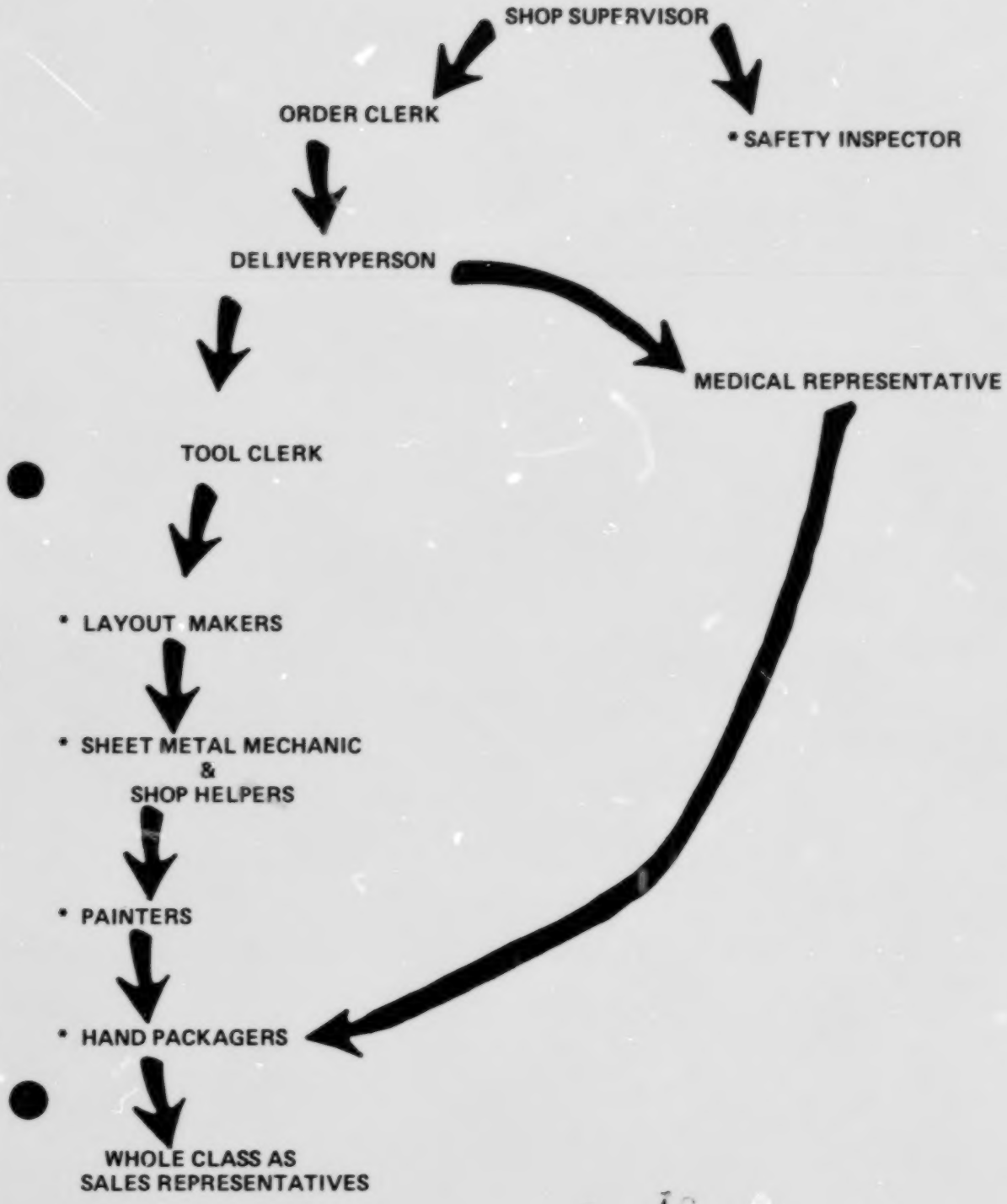
H. What are the working hours of this occupation (job)?

I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. 1 2 3 4 5 I like it.

SHEET METAL ACTIVITY FLOW CHART



ORDER CLERK

HAND PACKAGER

DELIVERYPERSON

SHOP SUPERVISOR

SAFETY INSPECTOR

TOOL CLERK

MEDICAL EQUIPMENT AND SUPPLY REPRESENTATIVE

LAYOUT MAKER

SHEET METAL MECHANIC

SHEET METAL SHOP HELPER

BRUSH PAINTER

SALES REPRESENTATIVE

T & I – SHEET METAL

Kit No. 44

STUDENT
LEARNING ACTIVITY GUIDE

Prepared by

Mr. Lee Sloan
Cherokee Area Vocational Center
Gaffney, South Carolina 29340

State Department of Education
Office of Vocational Education
Prevocational Education
Columbia, South Carolina 29201

In Cooperation With

Vocational Education Media Center
Clemson University
Clemson, South Carolina 29631

1978

INTRODUCTION

This activity represents some of the activities of the sheet metal industry. This is a very basic project and some of the skills needed in the sheet metal fabrication industry are illustrated. Other occupations, necessary to the sheet metal industry, are also explored.

The activity is based on the construction of one kit, but this could be expanded to the production of as many kits as time and funds will allow. The basic fabrication (putting the kit together) of the kit will take four or five class periods (50 minutes each).

The teacher will provide the materials, set up the working areas, appoint the shop supervisor, and serve as an advisor for the complete project. The shop supervisor will be in charge of all individual and group activities, reporting to the teacher regarding the progress of the activity and for assistance with major problems.

The first-aid kits, once completed, can be used in the class shop, the students' homes or cars, etc. If the class/teacher decides to produce more than one first-aid kit, the kits could possibly be sold to cover the expenses for the activity. If more than one first-aid kit is fabricated, the students may wish to exchange duties.

Because the students will be working with cutting tools and sharp metal edges, safety must be considered at all times. The following are general safety rules and practices to be obeyed to avoid accidents and injuries:

1. Always notify the instructor immediately when you are injured in shop, no matter how slight the injury.
2. Safety goggles of an approved type should be worn at all times in the shop when working with metals or chemicals (paint).
3. Place oil rags or other combustible or inflammable wiping materials in proper containers.
4. Keep aisles and walkways clear of excess materials, scrap, or waste.
5. Return all tools to proper storage after use.
6. Operate machines only when authorized.
7. Avoid needless shouting, whistling, or horseplay in the shop.
8. Never touch metal when you expect it is hot.
9. Use gloves when handling metal with sharp edges.
10. Do not lean on a machine when someone else is using it.
11. Sharp-edged tools should be carried with their points and cutting edges downward.

DIRECTIONS

After the teacher has introduced this activity to the class and has chosen the shop supervisor, each student is to select an activity card. If you have any questions, ask the teacher. After all explanations have been made, the shop supervisor will take charge. Each student will report to the work area indicated on the activity card. Begin work when the shop supervisor gives the go-ahead.

STUDENT
LEARNING ACTIVITY GUIDE

ORDER CLERK

ORDER CLERK

INTRODUCTION

The order clerk is responsible for processing orders for materials, keeping records of prices, shipping dates, delays, etc. The clerk keeps the customer or company informed about the progress of the orders.

GOAL

The student will develop a better understanding of the type of activities performed by an order clerk upon the completion of this activity.

DIRECTIONS

The student must follow the directions carefully, completing each step before continuing to the next step. If any problems are met, ask the shop supervisor for help.

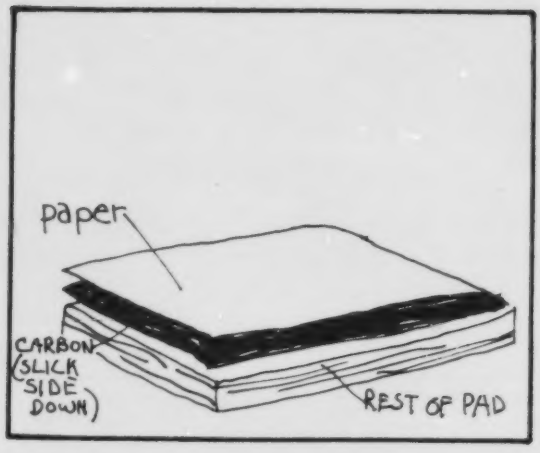
MATERIALS

Pencil, pad, carbon paper

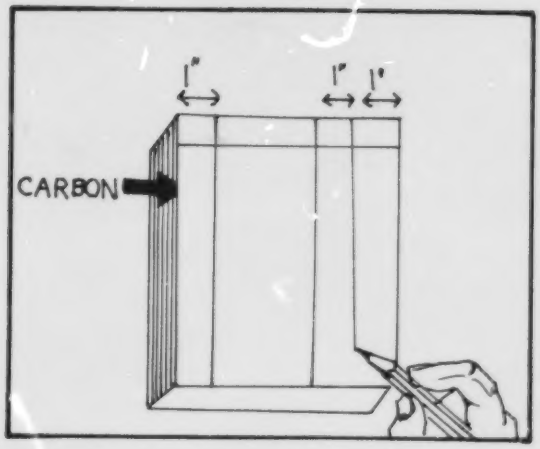
Instructional Objective 1

The student will make a pad for ordering materials.

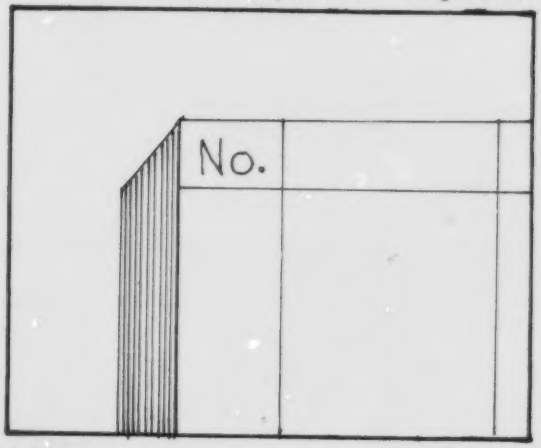
STEP 1 – Obtain a pencil and pad.



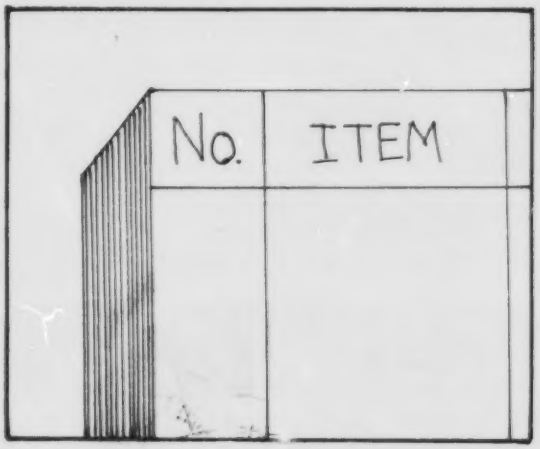
STEP 2 – Place a sheet of carbon paper between the first and second sheet of paper, slick side down.



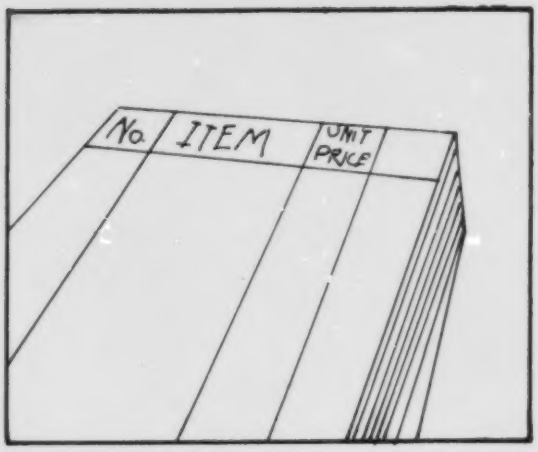
STEP 3 – Line the pad as shown, with a 1" (2.54 cm) space on the left side of the page and two 1" (2.54 cm) spaces on the right side.



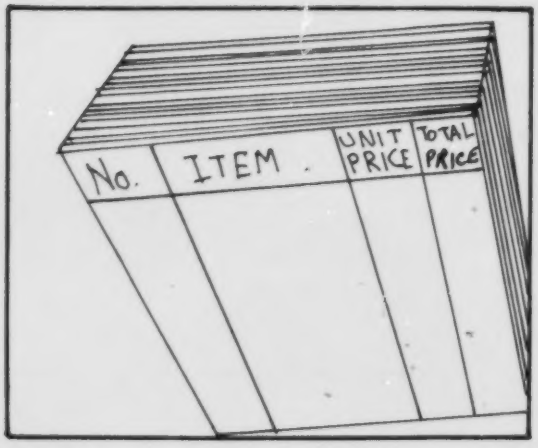
STEP 4 – Label the first space on the pad: quantity or number.



STEP 5 – Label the second space on the pad: item.



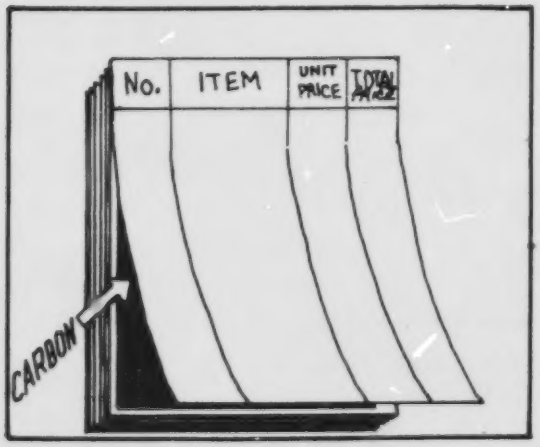
STEP 6 – Label the third space on the pad: unit price.



STEP 7 – Label the fourth space on the pad: total price.

Check Point

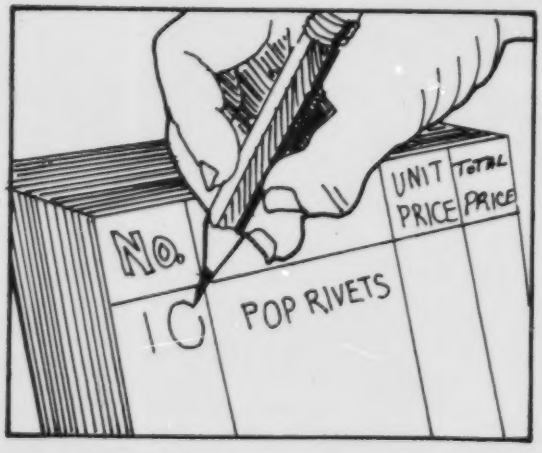
Does your pad look like the illustration?



Instructional Objective II

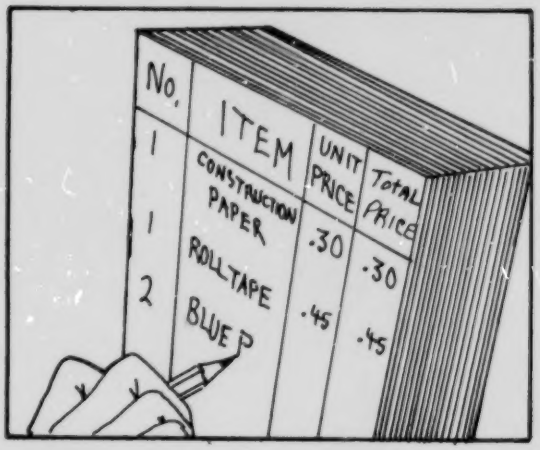
The student will write orders for materials needed for this activity when the shop supervisor approves them.

STEP 1 – When the shop supervisor orders an item, list the item under the "item" space on the pad.



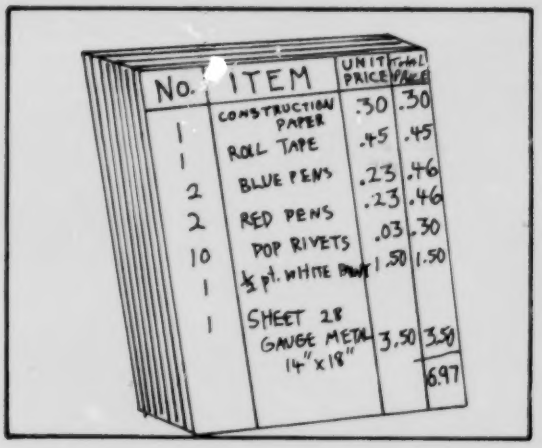
STEP 2 – Beside each item, write the number or amount of each item needed, under the "number" space on the pad.

STEP 3 – Ask the teacher for some unit prices to be used with each item.

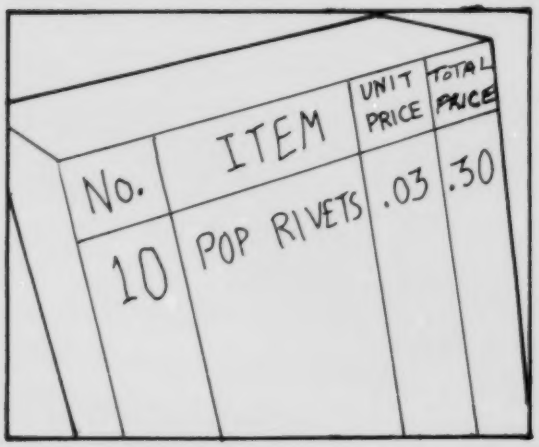


STEP 6 – Repeat this process for each item the shop supervisor orders.

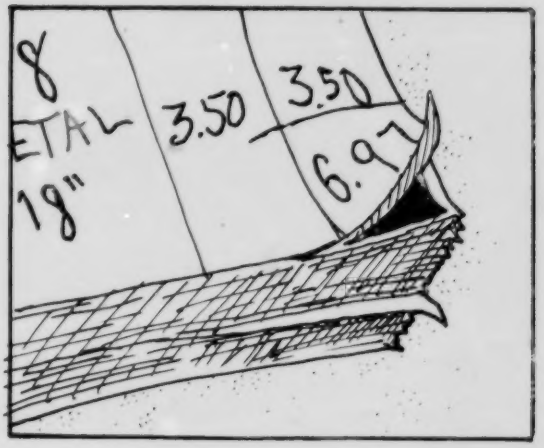
STEP 4 – Multiply the number of each item ordered times the unit price.



STEP 7 – After each complete order, add all the numbers in the total price column.

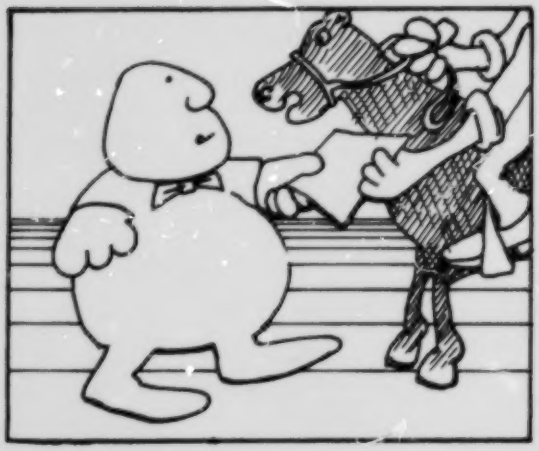


STEP 5 – Write this number under the space labeled "total price."



STEP 8 – Write this number at the bottom of the page.

10



STEP 9 – Give the order to the deliveryperson.

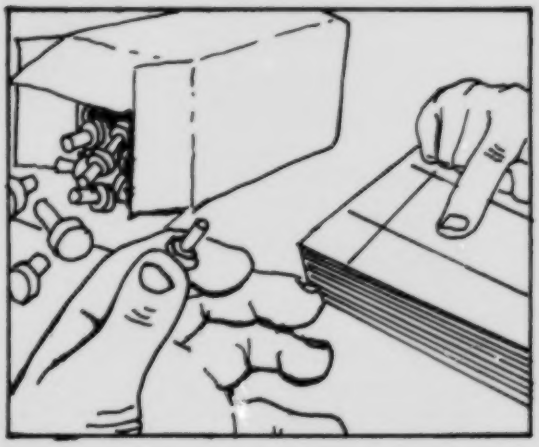
STEP 10 – Keep the carbon copy for the shop's records.

Check Point

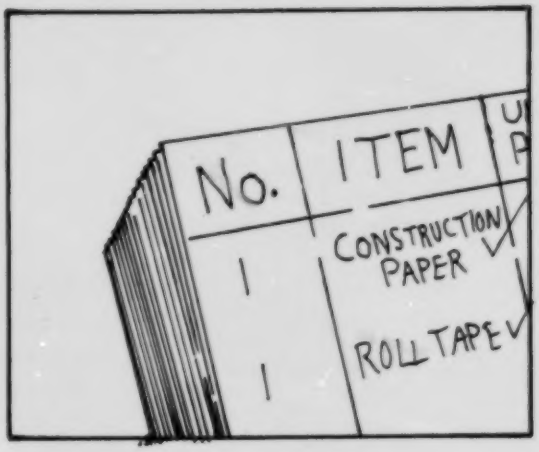
Ask your shop supervisor to review your math computations.

Instructional Objective III

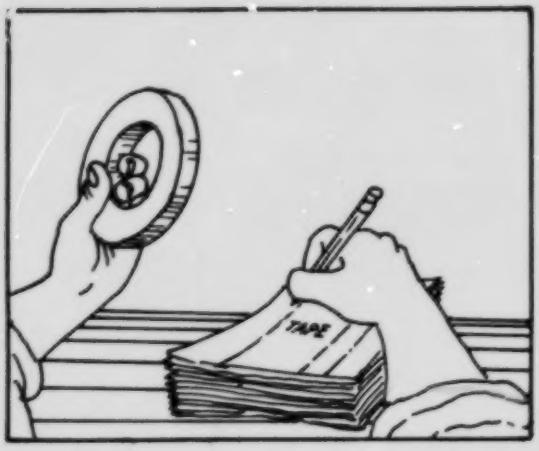
The student will check each item received off the shop's order list.



STEP 1 – When an item is delivered, locate the sheet on which the item was ordered.



STEP 2 – Place a check beside each item received.



STEP 3 – Check the number of items ordered and the number of each received.

STEP 4 – If there is a difference in the numbers, inform the shop supervisor.

Check Point

Turn this sheet over to the shop supervisor upon completion of the objective.

STUDENT
LEARNING ACTIVITY GUIDE

DELIVERYPERSON

DELIVERYPERSON

INTRODUCTION

The deliveryperson delivers light merchandise to customers, loads and unloads items, and delivers the items to the proper department or person.

GOALS

Upon completion of this activity, the student will have gained some insight into the work of a deliveryperson.

DIRECTIONS

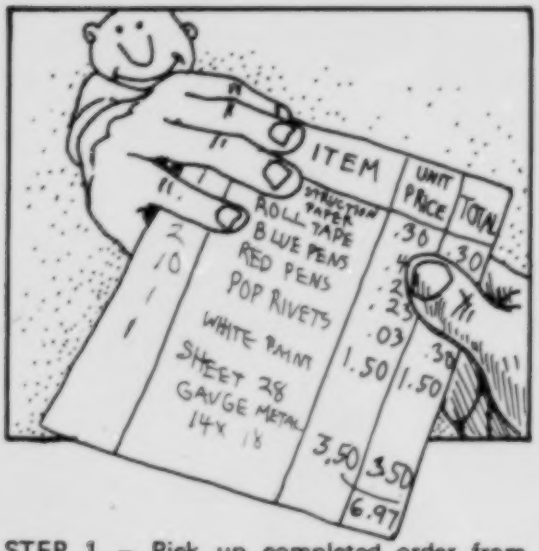
Follow the directions very carefully, step-by-step, completing each step before continuing to the next step. If any problems arise, ask the shop supervisor for help.

MATERIALS

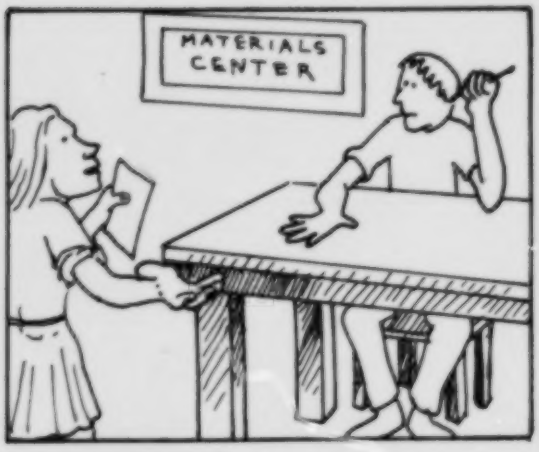
Pencil

Instructional Objective 1

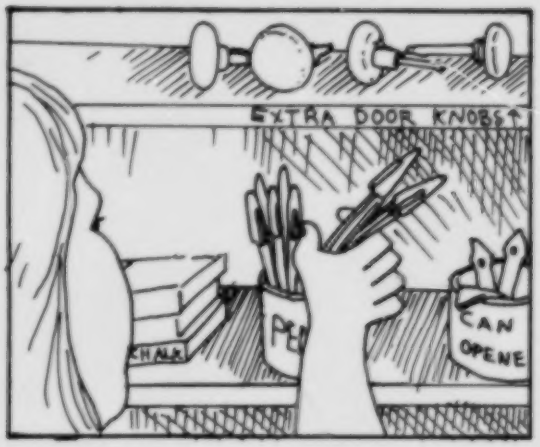
The student will obtain the materials ordered.



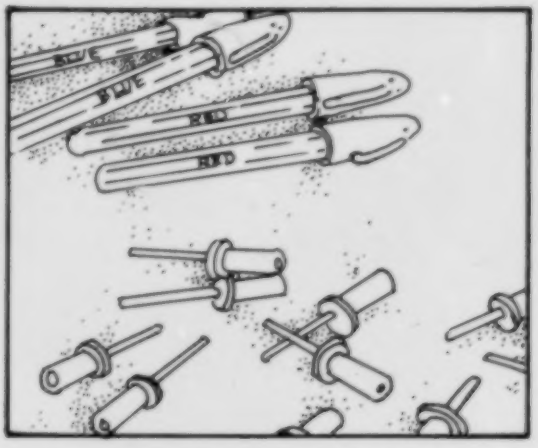
STEP 1 – Pick up completed order from order clerk.



STEP 2 – Go to the materials center.



STEP 3 – Locate the ordered materials.



STEP 4 – Secure the required amount of each item ordered.

Check Point

Be careful when filling out orders – a mistake at this point might affect the outcome of the project.

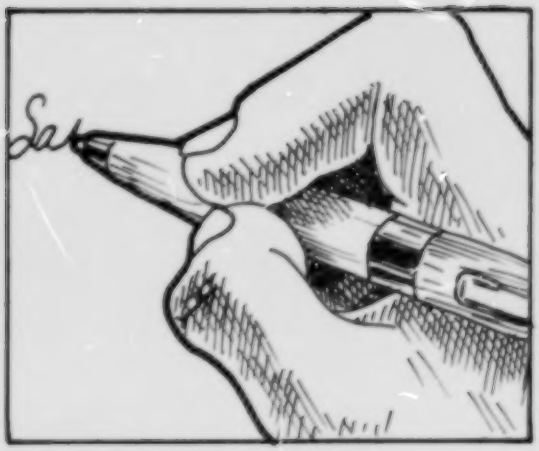
21

Instructional Objective II

The student will deliver the materials ordered to the order clerk and proper departments.

STEP 1 – Carry the ordered items to the order clerk.

STEP 2 – Help the order clerk check in each item.



STEP 3 – Have the order clerk sign the order form.

STEP 4 – With the shop supervisor's assistance, deliver each item to the proper department.

STEP 5 – Repeat this process for each order.

Check Point

Turn in signed order forms to the teacher at the end of the activity.

STUDENT
LEARNING ACTIVITY GUIDE

MEDICAL EQUIPMENT & SUPPLIES REPRESENTATIVE

INTRODUCTION

The medical equipment and supplies representative is responsible for determining the type and quantity of first-aid supplies to be included in the first-aid kit. Part of the research should include an interview with the school nurse or a doctor.

GOAL

Upon completion of this activity, the student will be familiar with the type of supplies found in a first-aid kit.

DIRECTIONS

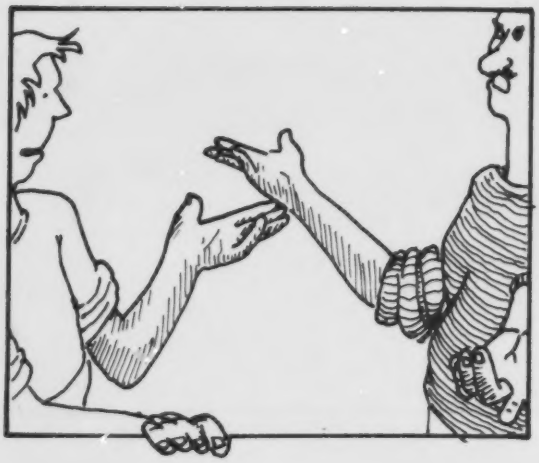
To perform this activity correctly, the student must follow the directions carefully, moving from one step to the next step. If any problems are encountered, ask the shop supervisor for help.

MATERIALS

Pencil, notebook paper

Instructional Objective 1

The student will list 10-12 first-aid items that should be included in the first-aid kit.

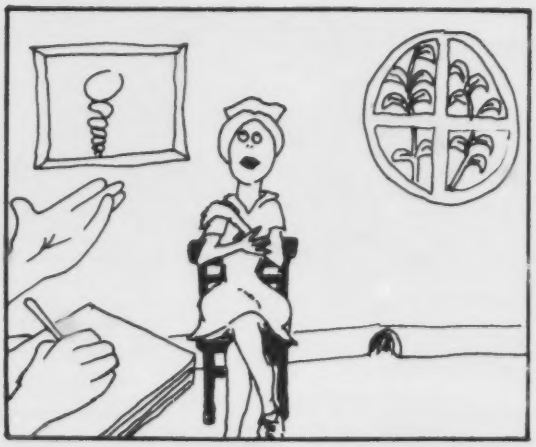


STEP 1 – Check with the shop supervisor to determine the type of first-aid kit to be supplied (one for the class shop, family car, home, etc.)

STEP 2 – With this information, ask the teacher for permission to visit the school nurse, doctor, etc.

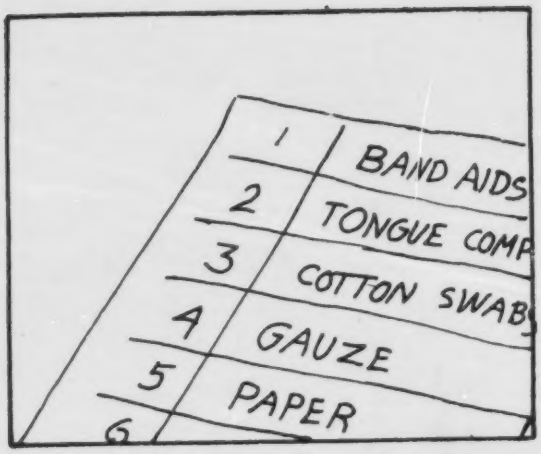
STEP 3 – After receiving permission, take pencil and notebook paper and go to see the school nurse, doctor, etc.

STEP 4 – Explain to the nurse/doctor the reason for your visit.



STEP 5 – Ask the nurse to name 10-12 items that need to be included in the first-aid kit.

23



STEP 6 – List these items.

STEP 7 – Thank the nurse and return to class.

Check Point

Recopy the list of supplies and give them to the shop supervisor.

STUDENT
LEARNING ACTIVITY GUIDE

TOOL CLERK

INTRODUCTION

The tool clerk is responsible for issuing all hand tools and equipment, keeping accurate records as to the location of all equipment, and delivering all tools and equipment to the proper work areas.

GOAL

Upon completion of this activity, the student will have a better understanding of the importance of the tool-room clerk.

DIRECTIONS

Follow all directions carefully, completing each step before continuing to the next step. If any problem arises, ask the shop supervisor for help.

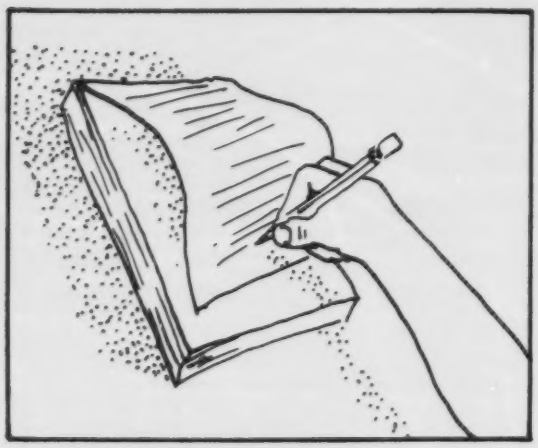
MATERIALS

Pencil, pad

Instructional Objective 1

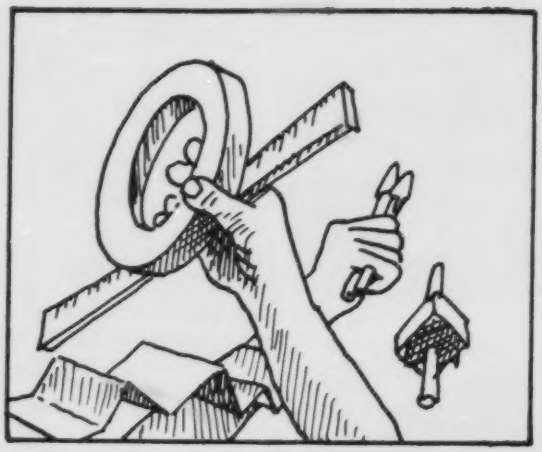
The student will deliver equipment and tools to the proper work areas.

STEP 1 – Obtain a pencil and pad.

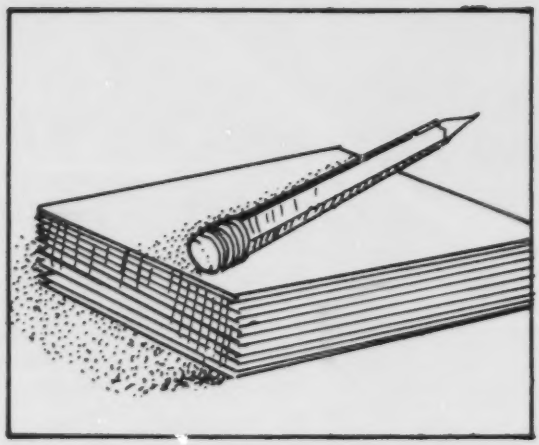


STEP 2 – List the following equipment on page 1 of the pad:

construction paper 14" x 18" (35.6 cm x 45.7 cm)
12" (30.5 cm) steel ruler
pencils, one per person
scriber
masking tape
first-aid kit master pattern
red pen
blue pen
black pen



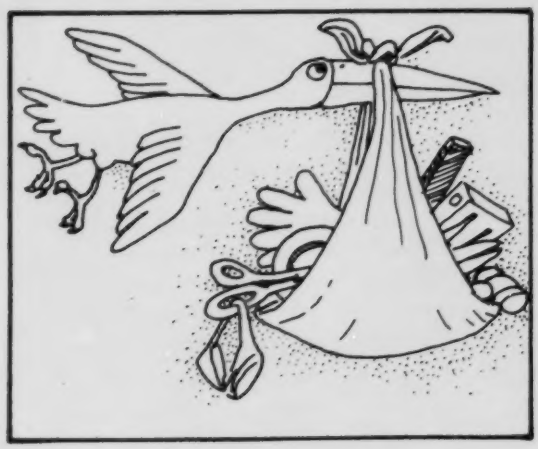
STEP 3 – Deliver these to the layout area.



STEP 4 – Have the layout maker sign for the equipment on the bottom of the equipment list.

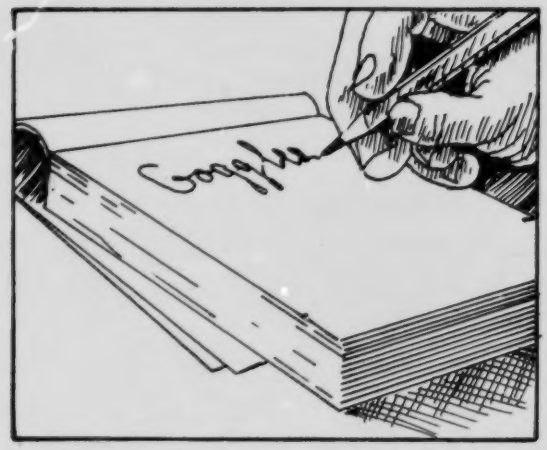
STEP 5 – List the following equipment on page 2 of the pad:

scissors
scotch tape
straight snips
soft-faced hammer
safety goggles
gloves
pop rivet gun
paper hole punch
hand punch
rivets
file



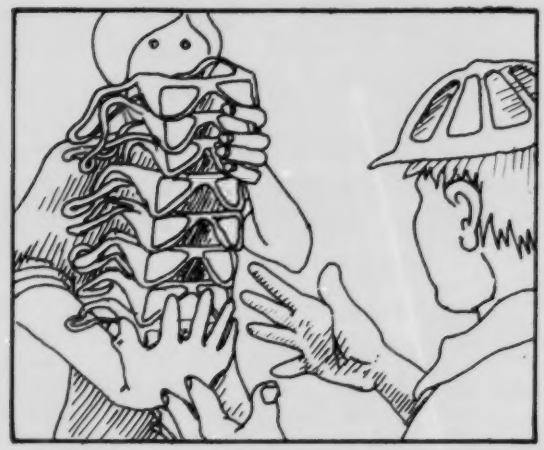
STEP 6 – Deliver these to the sheet metal mechanic's work area.

STEP 7 – Have the mechanic sign for the equipment on the bottom of the equipment list.

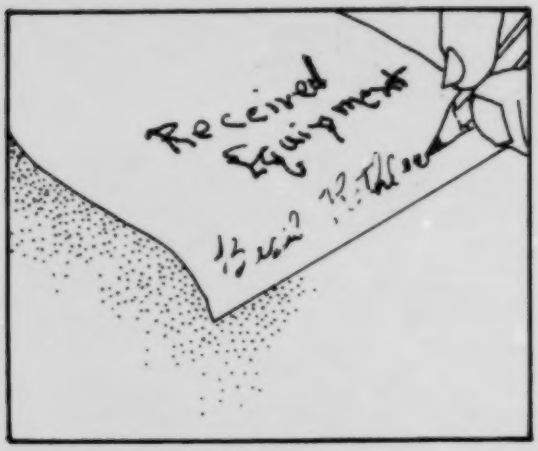


STEP 8 – List the following equipment on page 3 of the pad:

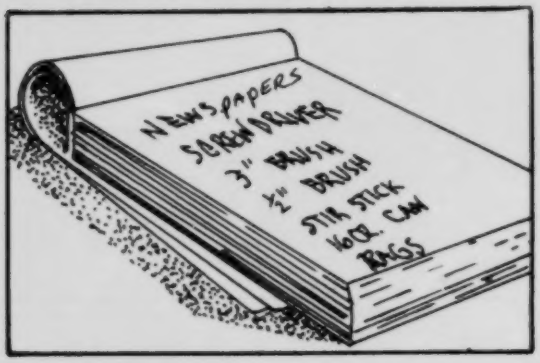
safety goggles



STEP 9 – Deliver to the safety inspector.



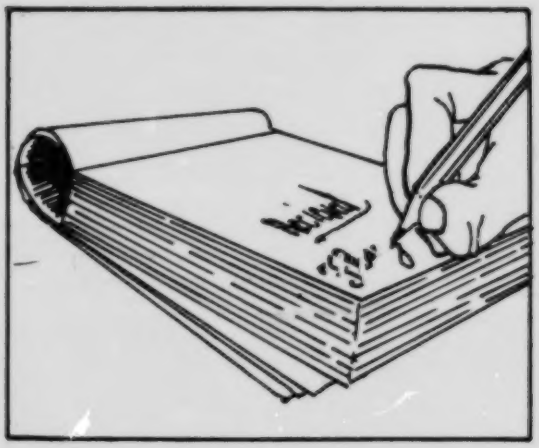
STEP 10 – Have the safety inspector sign for the equipment on the bottom of the page.



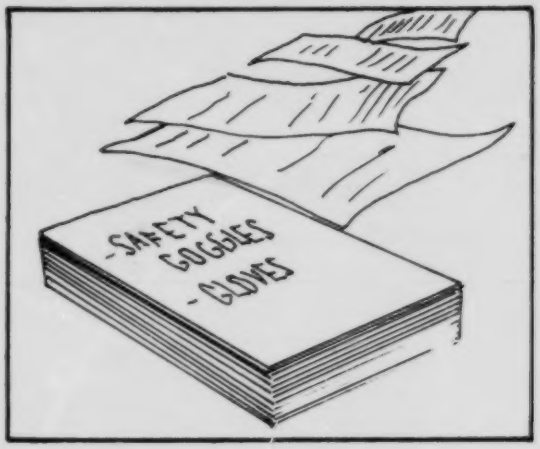
STEP 11 – List the following equipment on page 4 of the pad:

newspapers
screwdriver
3" (7.6 cm) brush
½" (1.27 cm) brush
stir stick
16 oz. empty can (.45 kg)
rags

STEP 12 – Deliver these to the painting area.



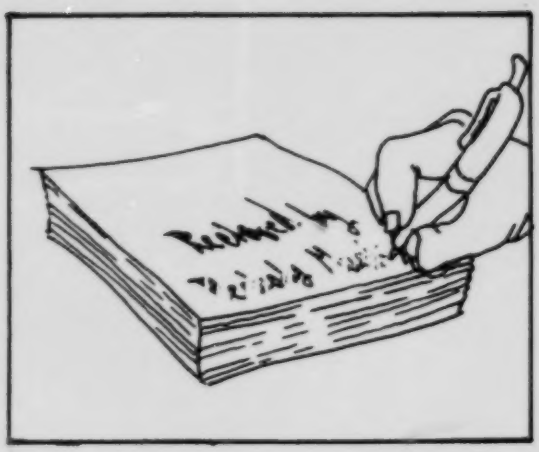
STEP 13 – Have the painter sign for the equipment on the bottom of the page.



STEP 14 – List the following equipment on page 5 of the pad:

safety goggles
gloves

STEP 15 – Deliver to sheet metal mechanic's work area.



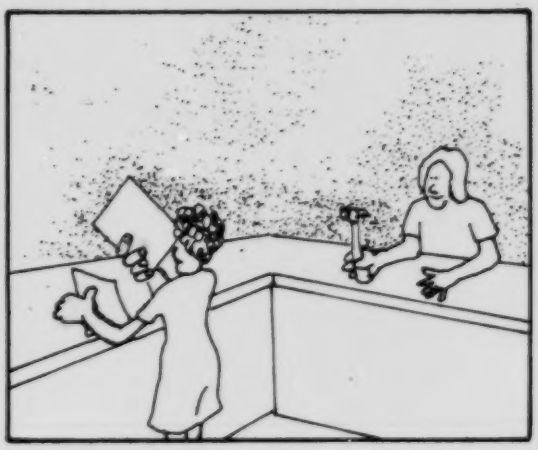
STEP 16 – Have the helper sign for the equipment on the bottom of the page.

Check Point

Check to be sure each department has the necessary equipment and tools.

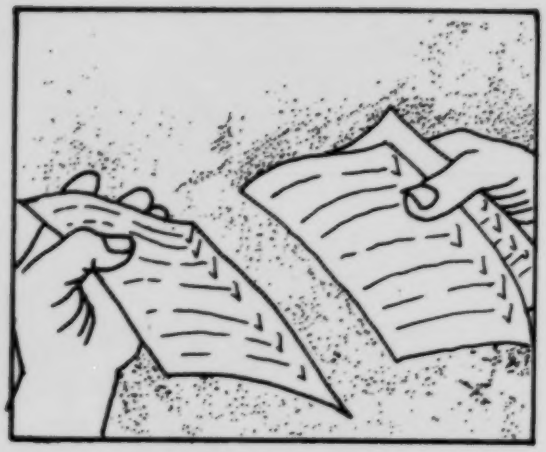
Instructional Objective II

The student will check the equipment off the lists as the workers turn it into the tool room.



STEP 1 – When a worker brings in a tool, locate the proper list.

STEP 2 – Place a check beside each item on the list when it is turned in.



STEP 3 – When all tools have been turned in, check all lists to see if anything is missing.

Check Point

Report the results of the final check to the shop supervisor.

STUDENT
LEARNING ACTIVITY GUIDE

LAYOUT MAKER

INTRODUCTION

The purpose of the layout maker is to trace the pattern of the first-aid kit on construction paper and later on sheet metal. The layout maker is also responsible for labeling and putting directions on the construction paper pattern and sheet metal pattern.

GOAL

Upon completion of this activity, the student will understand the importance of the layout maker's job and the various activities related to the layout of a pattern.

DIRECTIONS

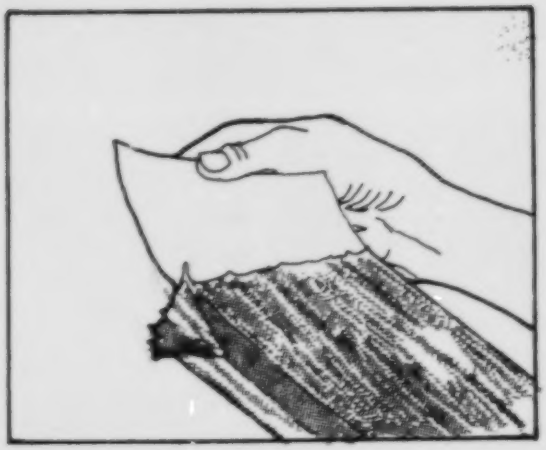
The student must follow all directions carefully, completing each step before going on to the next step. If a problem arises, ask the shop supervisor for help.

MATERIALS

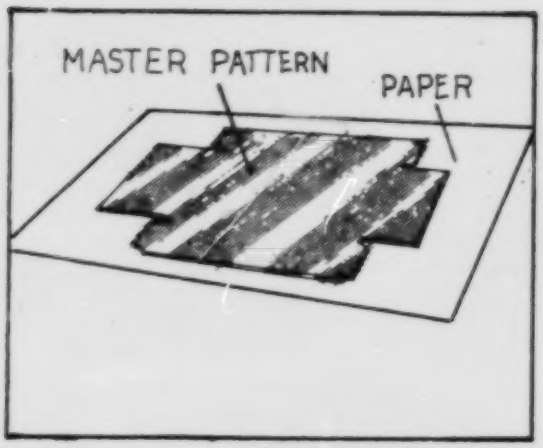
Construction paper, pencils, 12" (30.5 cm) steel rule, scriber, masking tape, red pen, blue pen, black pen, first-aid kit master pattern, 28 gauge sheet metal, safety goggles.

Instructional Objective 1

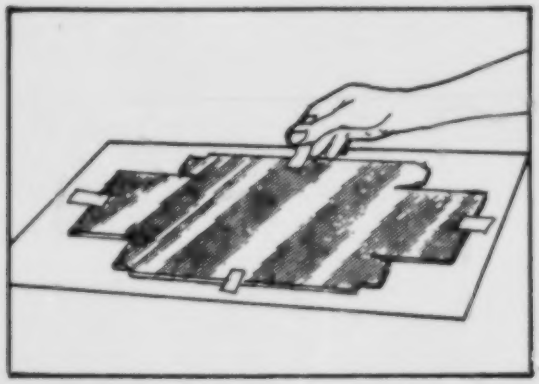
The student will trace the metal pattern onto the construction paper.



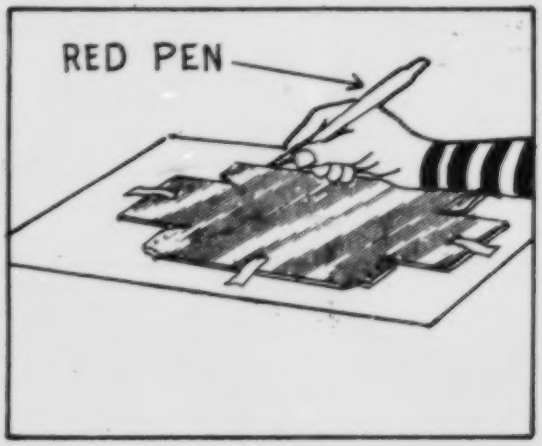
STEP 1 – Obtain a sheet of construction paper.



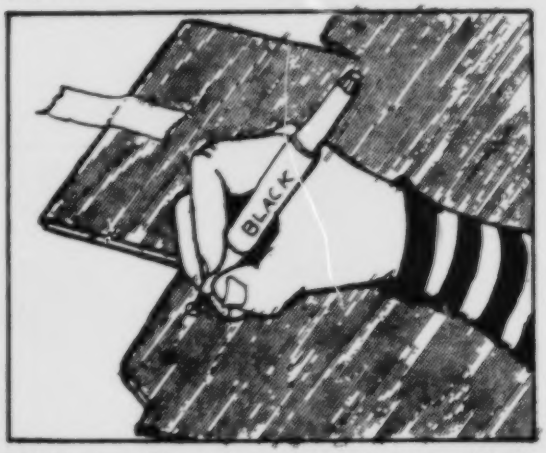
STEP 2 – Place the master pattern on the paper.



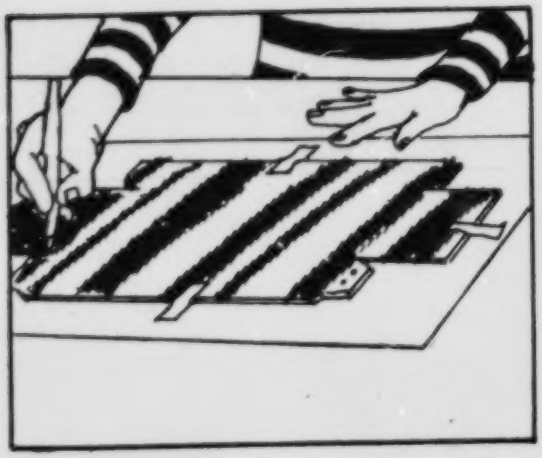
STEP 3 – Using 1" (2.54 cm) strips of masking tape, tape the pattern to the paper to keep it from shifting. Tape the four sides.



STEP 4 – Trace the outline of the master pattern onto the paper using a red pen, being careful to hold the pen slanted toward the paper.

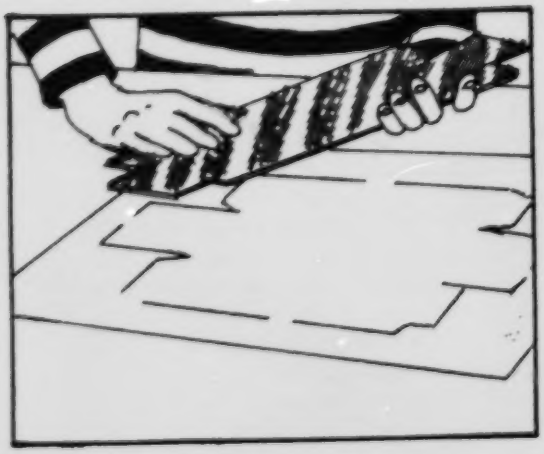


STEP 5 – Trace in any holes with a black pen.

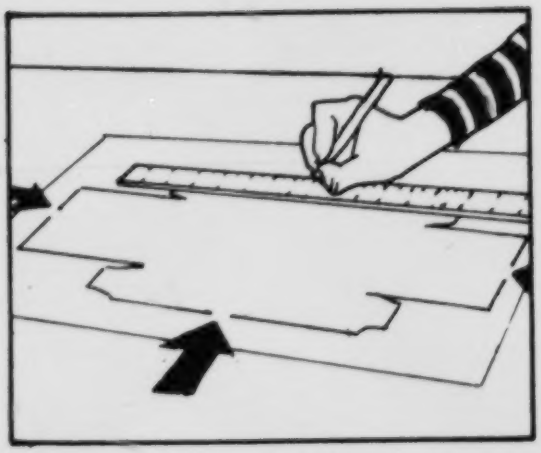


STEP 6 – Mark the position of all lines on the paper.

STEP 7 – Remove the tape carefully.



STEP 8 – Remove the master pattern.



STEP 9 – Using the red pen and steel rule, complete the lines that were covered by the tape strips.

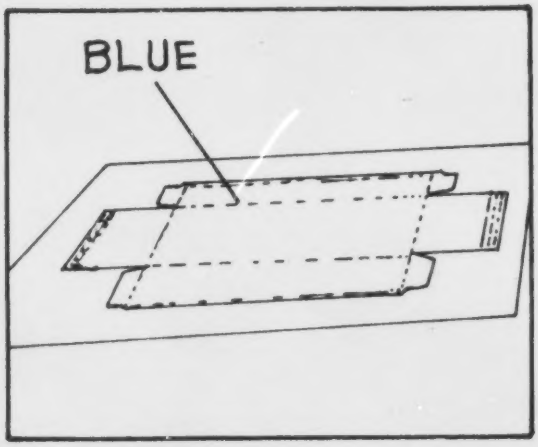
Check Point

Check to see that all lines are clear.

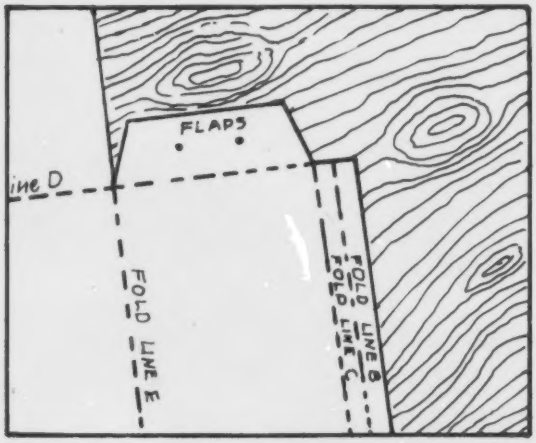
40

Instructional Objective II

The student will draw in the fold lines and label the lines.

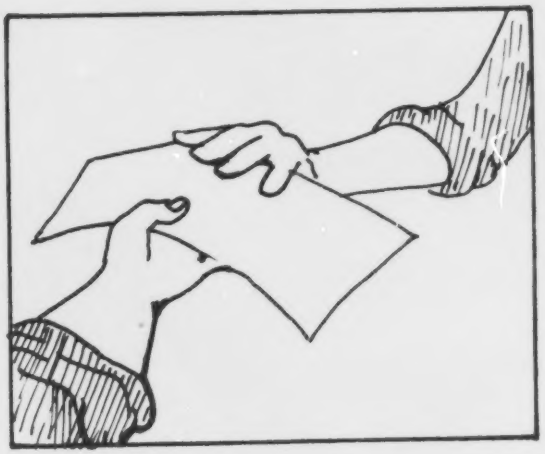


STEP 1 – Using the marks made in Obj. I, draw the fold lines using the steel rule and the blue pen.



STEP 2 – Label the lines on the drawing exactly as they are on the master pattern.

STEP 3 – Check the drawing carefully to see that it is exactly like the pattern.



STEP 4 – After checking the drawing and the pattern, turn the paper drawing over to the sheet metal mechanic.

Check Point

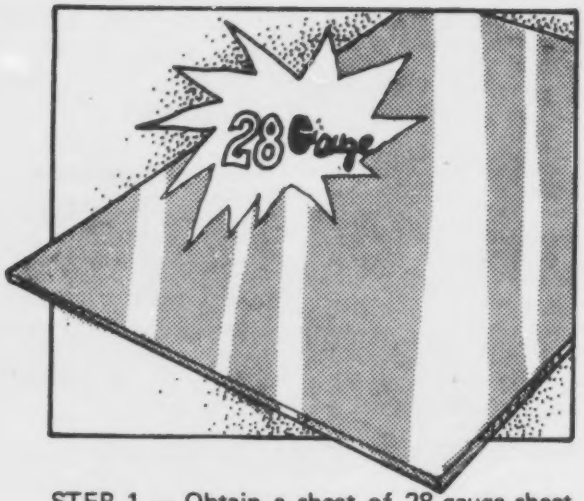
Before beginning the next phase, check with the shop supervisor to see if the paper box was correct when assembled.

If the pattern was assembled correctly, continue to the next phase.

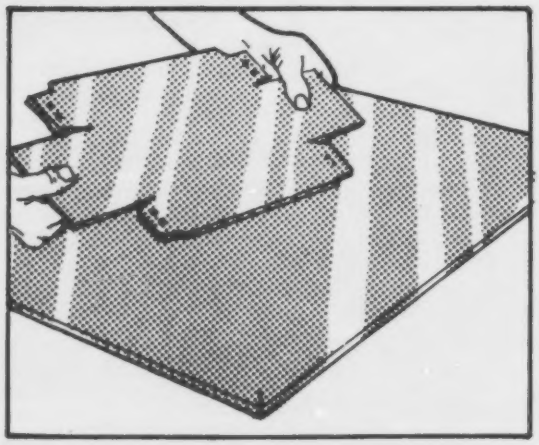
If the drawing had some flaw that prevented proper assembly, determine the error; start over, following the instructions carefully.

Instructional Objective III

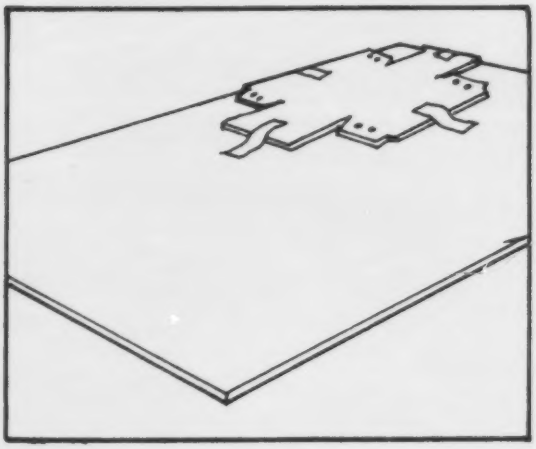
The student will trace the master pattern onto the 28 gauge sheet metal.



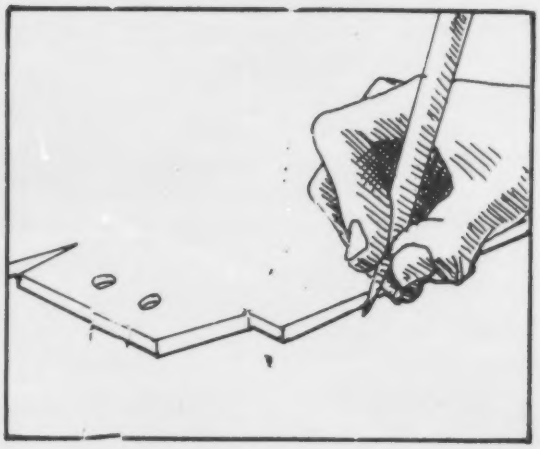
STEP 1 – Obtain a sheet of 28 gauge sheet metal.



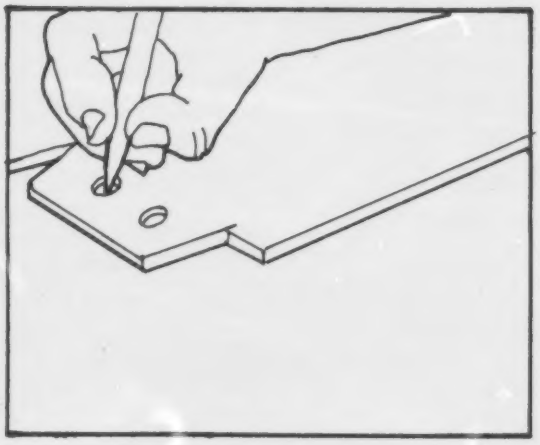
STEP 2 – Place the master pattern on the sheet metal.



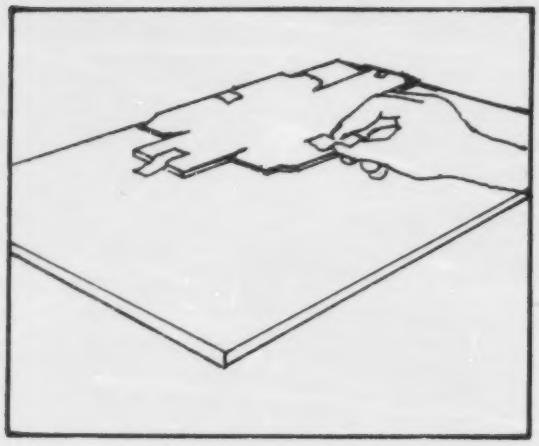
STEP 3 – Using 1" (2.54 cm) strips of tape, fasten the four sides of the pattern to the sheet metal.



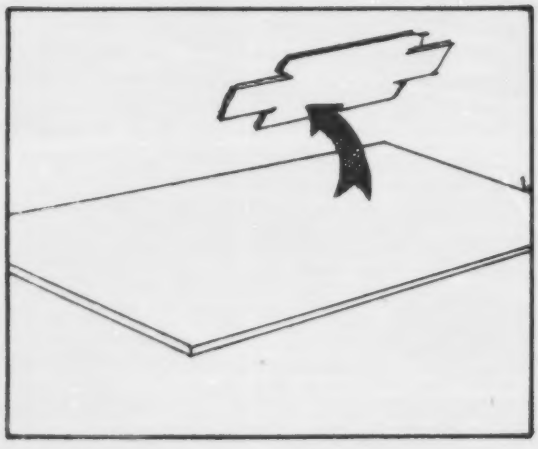
STEP 4 – Trace the master pattern onto the sheet metal, using the scriber.



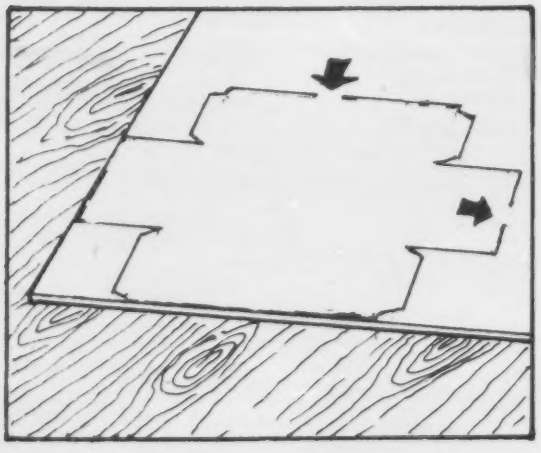
STEP 5 – Trace the holes onto the sheet metal using the scriber.



STEP 7 – Remove the tape strips.



STEP 8 – Remove the master pattern.



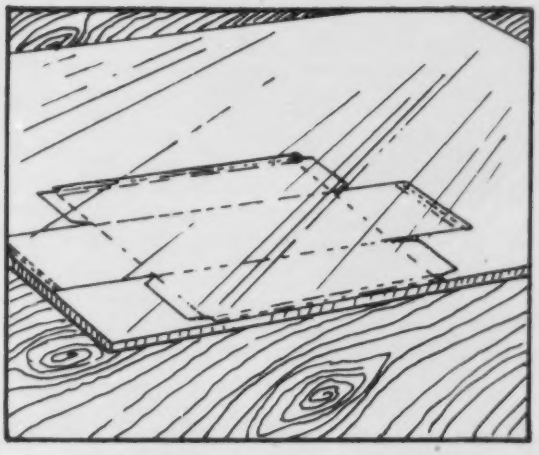
STEP 9 – Using the 12" (30.5 cm) rule, complete the lines as with the paper drawing.

Check Point

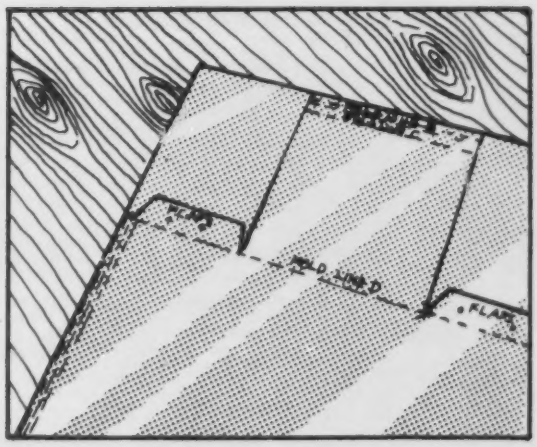
Check the drawing to be sure all lines are accurate and complete.

Instructional Objective IV

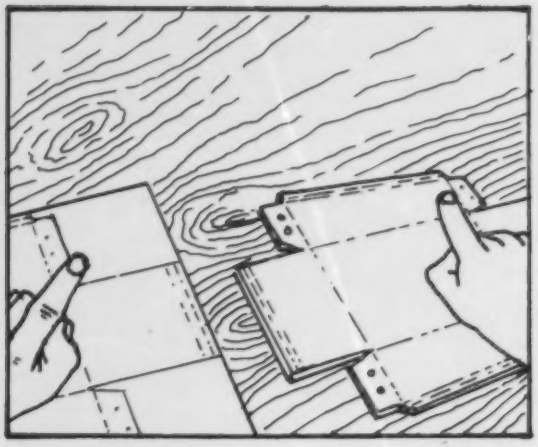
The student will draw in and label the fold lines.



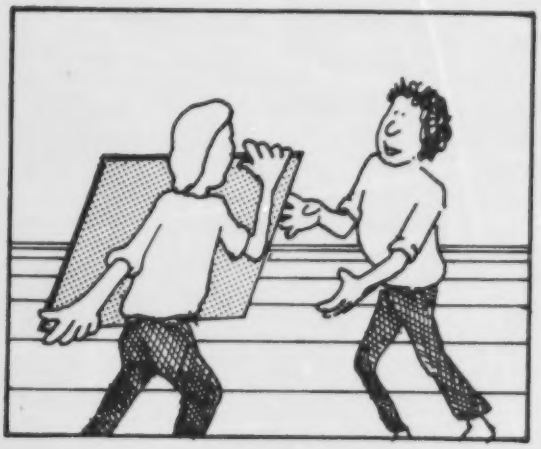
STEP 1 – Using the marks made in Objective III, draw the fold lines using the steel rule and the scriber.



STEP 2 – Label the lines on the sheet metal exactly as they are on the master pattern.



STEP 3 – Check the sheet metal tracing to see that it is exactly like the master pattern.



STEP 4 – Turn the sheet metal tracing over to the sheet metal mechanic.

Check Point

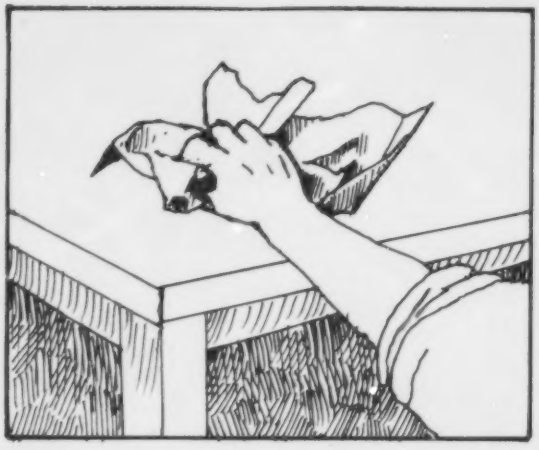
Before beginning the next phase, check with the shop supervisor to see if the sheet metal box was correct when assembled.

If the pattern was assembled correctly, continue to the next phase.

If the tracing has some flaw that prevented proper assembly, determine the error; start over, following instructions carefully.

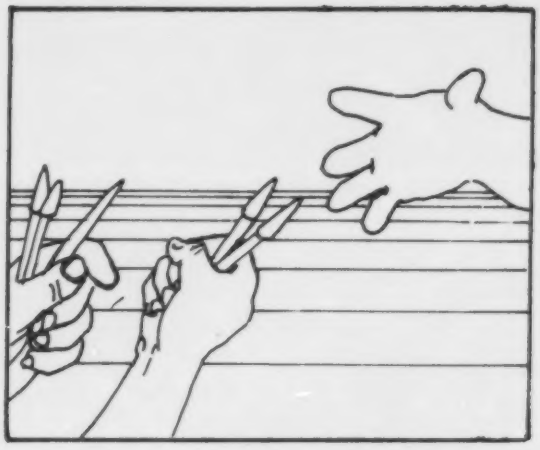
Instructional Objective V

The student will clean up the work area.



STEP 1 – After the project is completed, clean up the work area.

STEP 2 – Put all trash and scraps into the proper container.



STEP 3 – Return all tools to the tool clerk.

Check Point

Ask your shop supervisor to inspect your work area for cleanliness.

STUDENT
LEARNING ACTIVITY GUIDE

SHEET METAL MECHANIC

INTRODUCTION

The sheet metal mechanic's job is to fabricate (put together) the metal pattern into a first-aid kit box. This involves cutting, bending, forming, and riveting a piece of flat metal into the shape of a box.

GOAL

Upon completion of this activity, the student will have a knowledge of some of the skills necessary for sheet metal fabrication.

DIRECTIONS

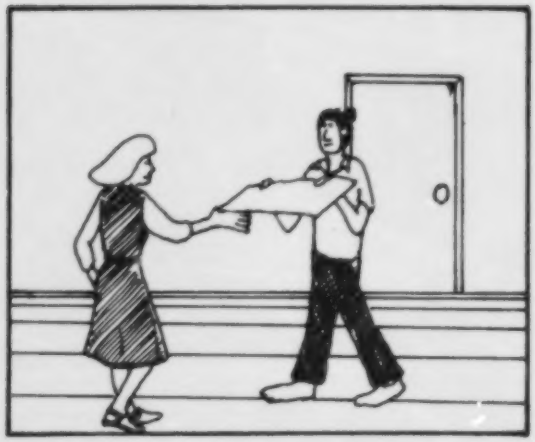
The student must follow the directions very carefully, completing each step before continuing to the next step. Safety rules must be observed at all times. If any problem arises, ask the shop supervisor for help.

MATERIALS

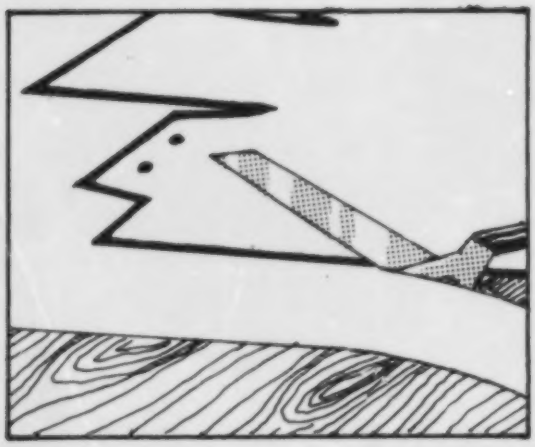
Construction paper layout, sheet metal layout, scissors, scotch tape, small pan brake, straight snips, soft-faced hammer, safety goggles, gloves, pop rivet gun, pop rivets, paper hole puncher, file, block of wood, pencil, hand punch, and hand seamer.

Instructional Objective 1

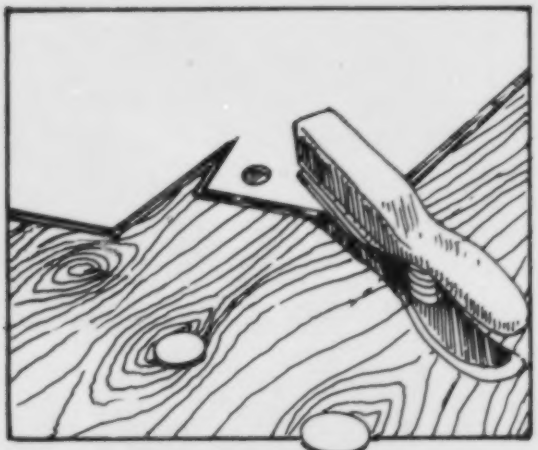
The student will cut, bend, shape, and construct a box from the paper layout.



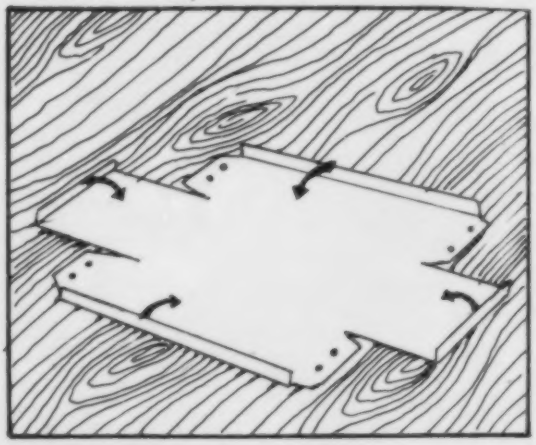
STEP 1 – Obtain the completed construction paper layout from the layout maker.



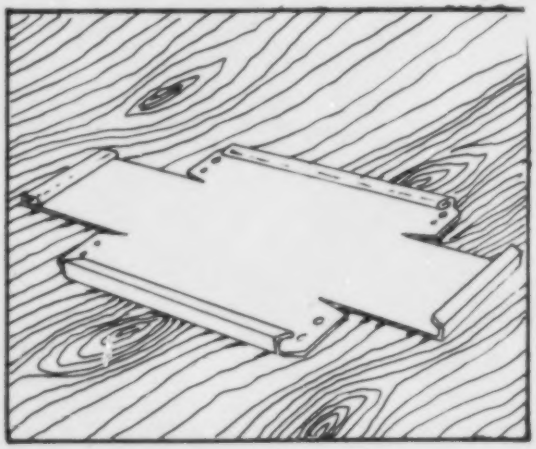
STEP 2 – Using the scissors, carefully cut the pattern out, leaving the red line "A" on the pattern.



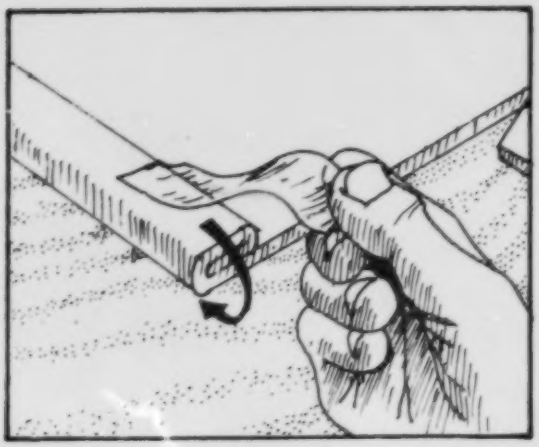
STEP 3 – Using the paper hole puncher, make holes where indicated by the black circles on the flaps.



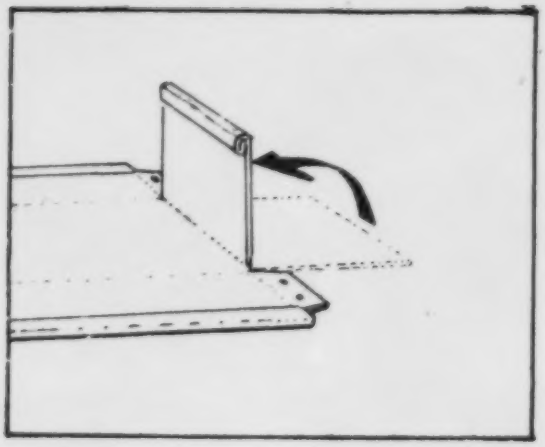
STEP 4 – To make the hem, fold the paper along line "B" for all sides.



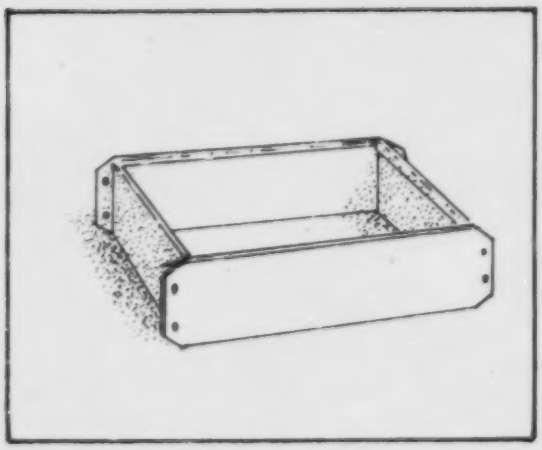
STEP 5 – Fold the paper again, along line "C" for all sides.



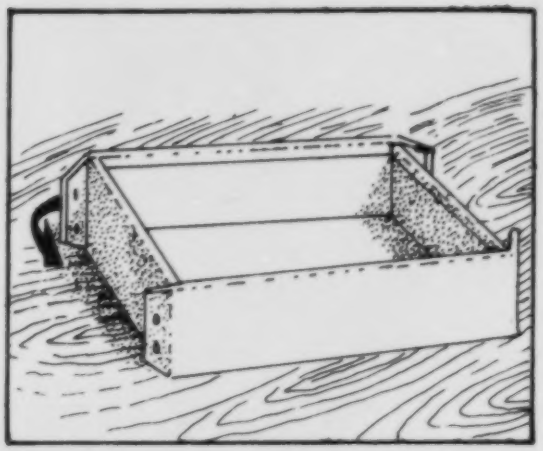
STEP 6 – Using short strips of scotch tape, tape the hems down to the sides.



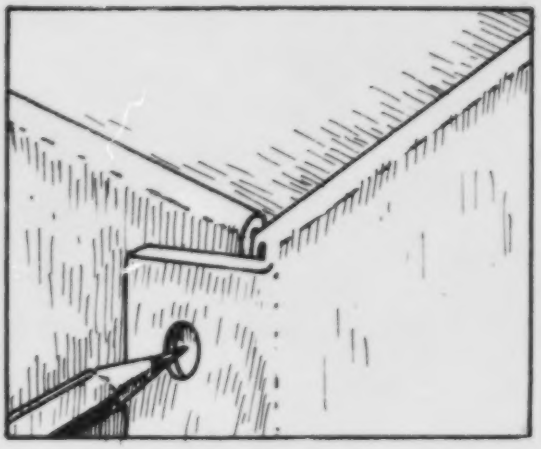
STEP 7 – Next, fold the paper along lines "D" ninety degrees (L) to form the ends of the box.



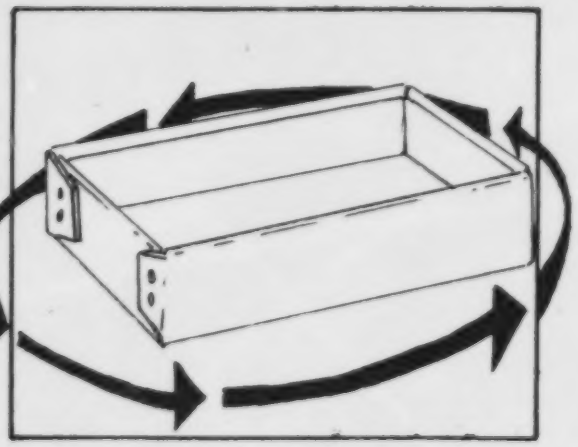
STEP 8 – Fold the paper along lines "E" ninety degrees (L) to form the sides of the box.



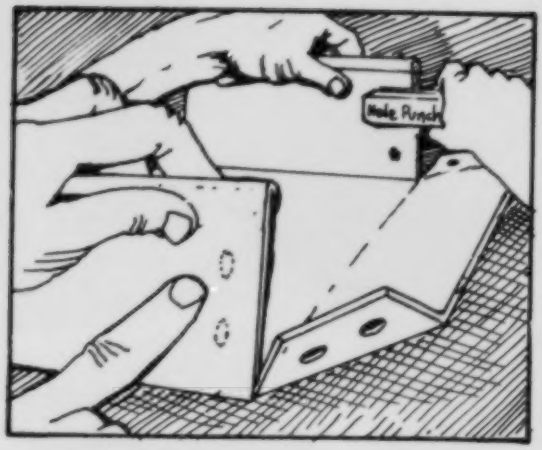
STEP 9 – Shape the box so that the four flaps are on the outside of the ends.



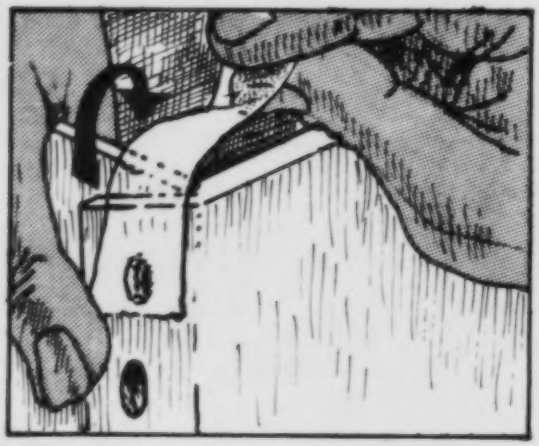
STEP 10 – Holding the box in the proper shape, use a pencil to draw holes through the flap holes onto the box ends.



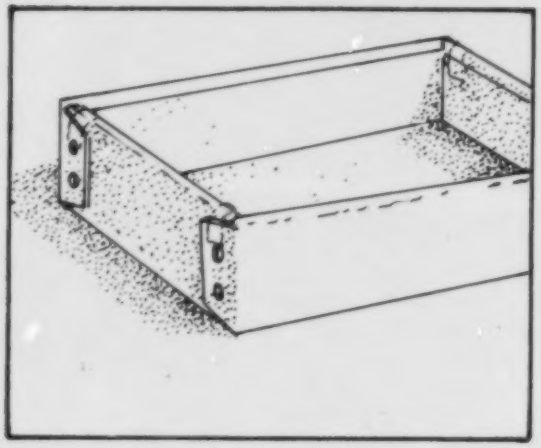
STEP 11 – Repeat for all sides.



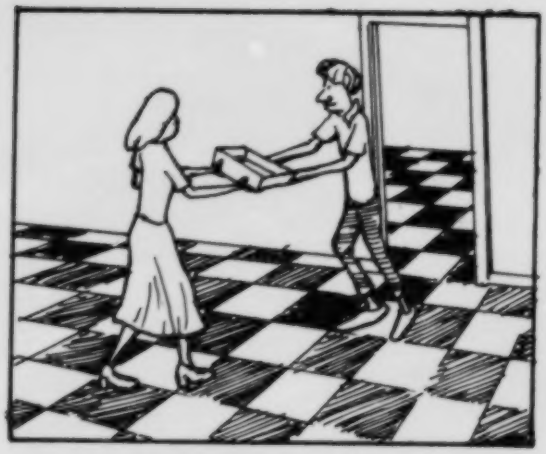
STEP 12 – Using the hand paper hole punch, punch these holes out.



STEP 13 – Tape the box together with scotch tape, making sure the flaps are on the outside.



STEP 14 – Check the shape of the box to be sure all corners are square and even.



STEP 15 – Give the box to the shop supervisor for approval.

Check Point

Before beginning the next phase, check with the shop supervisor to see if the box is correctly assembled.

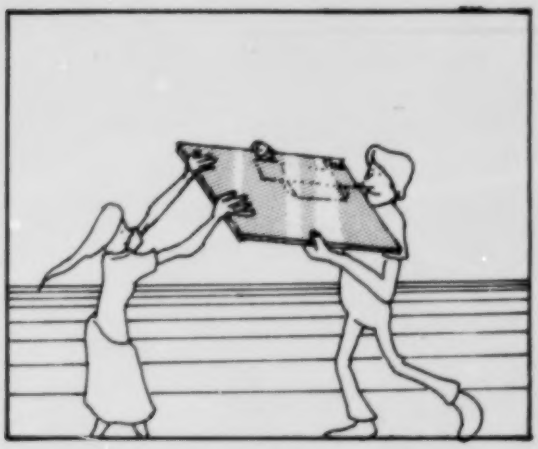
If the box is approved, go on to the next phase.

If the box is not approved, carefully take it apart, determine the error; start over, following the directions carefully.

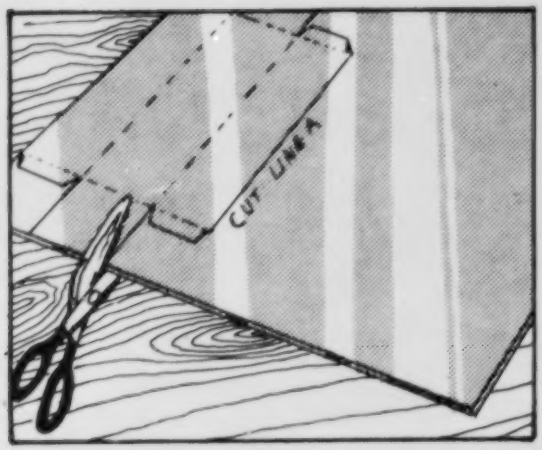
50

Instructional Objective II

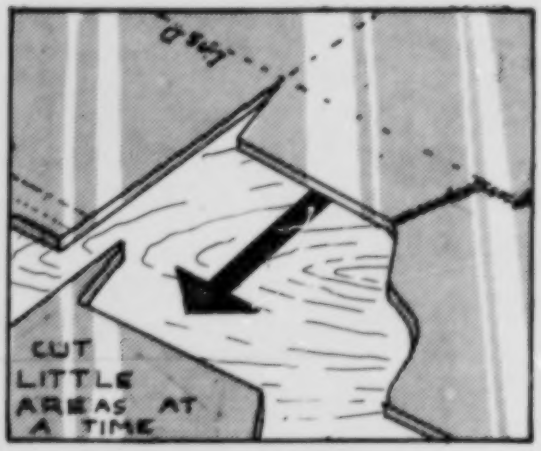
The student will cut the sheet metal layout from the sheet metal.



STEP 1 – Secure the sheet metal layout from the layout maker.



STEP 2 – Using the straight snips, cut along line "A." Use a glove on your free hand for protection from the sharp metal.



STEP 3 – Use extreme care in cutting the notches.

Check Point

Before continuing, obtain the master pattern from the layout maker.

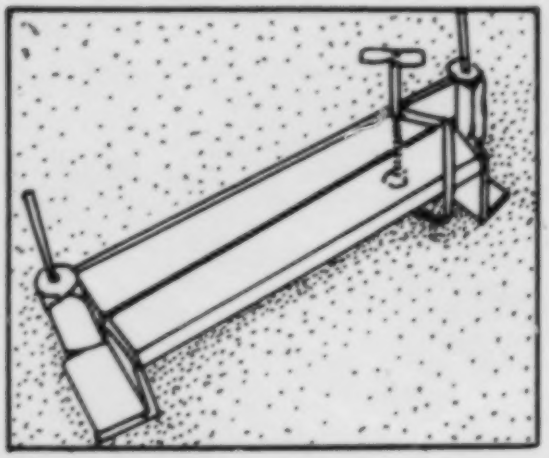
Check the cut layout with the master pattern.

If the two are alike, continue to the next phase.

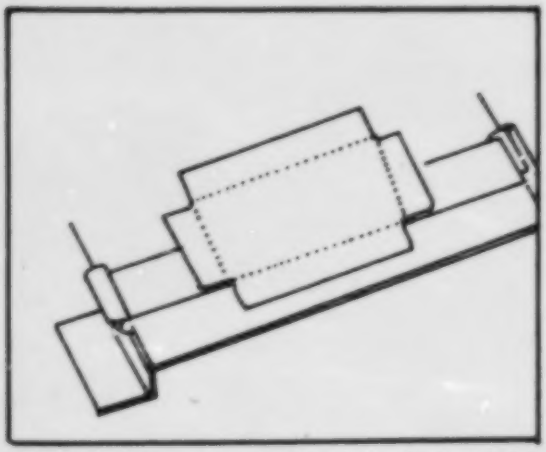
If the two are not alike, correct the cut layout. Do not cut or bend the master pattern.

Instructional Objective

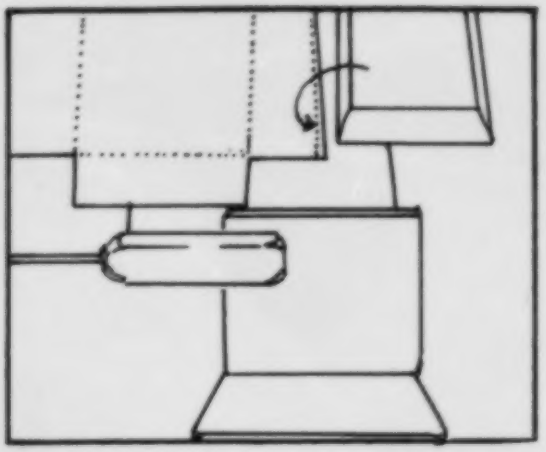
The student will bend and shape the layout to form a double hem along the four sides, using the pan brake.



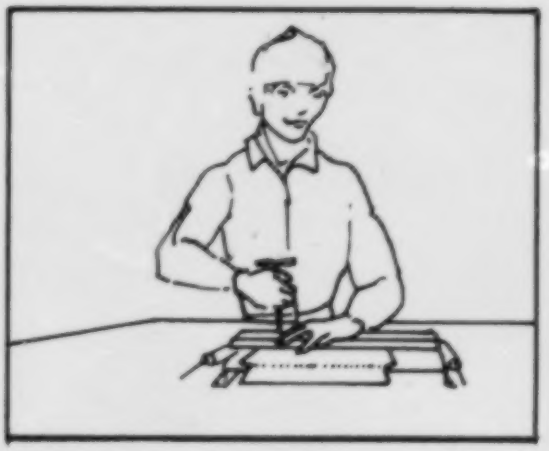
STEP 1 – Open the brake by unscrewing the C-Clamp.



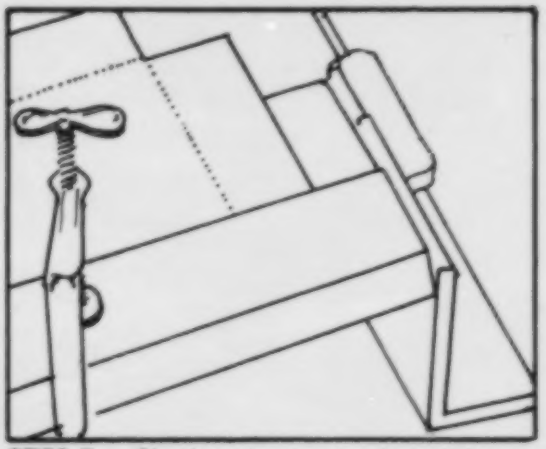
STEP 2 – Insert one side of the layout into the brake.



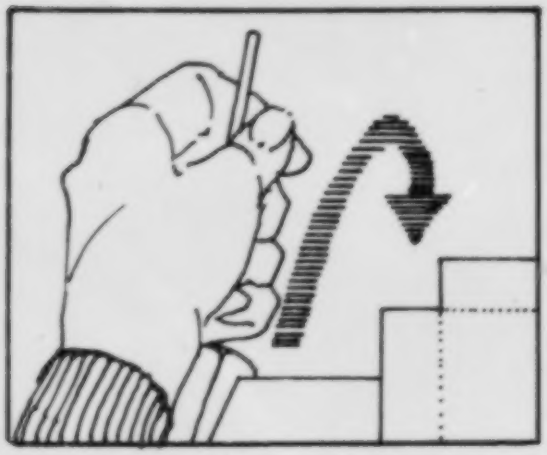
STEP 3 – Place the layout so that line "B" is flush or even with the edge of the top leaf.



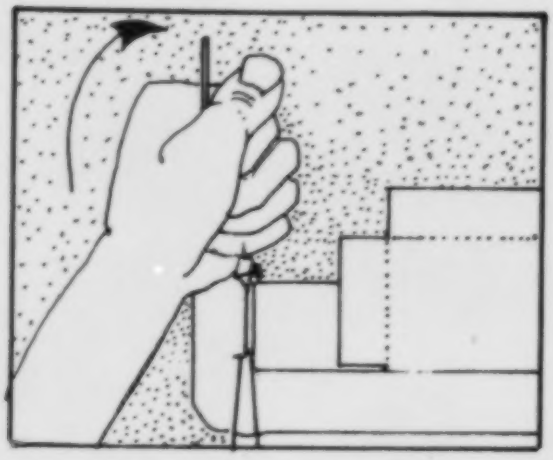
STEP 4 – Hold the layout, locking it in place and place the top leaf over line "B".



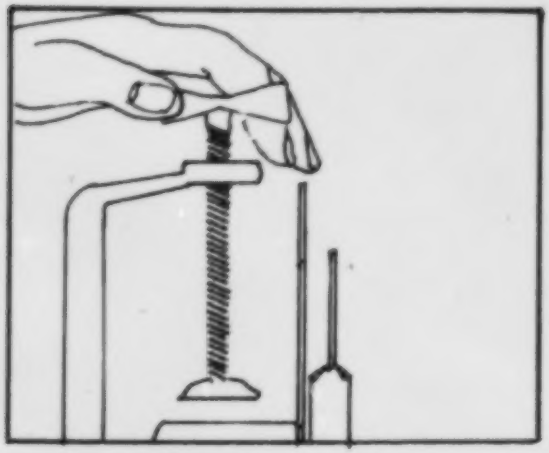
STEP 5 – Check to insure that line "B" is in the proper position, and the C-clamp is holding the layout securely.



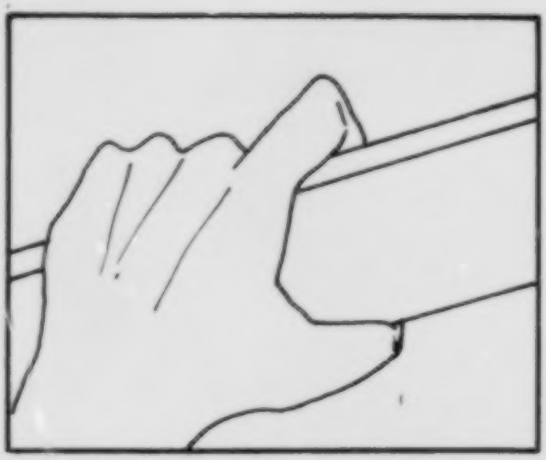
STEP 6 – Raise the bending leaf all the way to fold the metal.



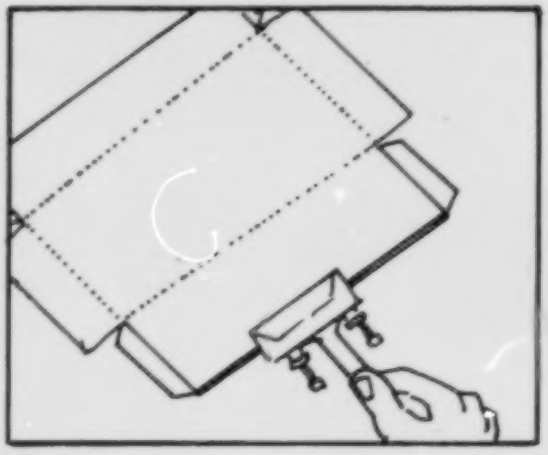
STEP 7 – Lower the bending leaf.



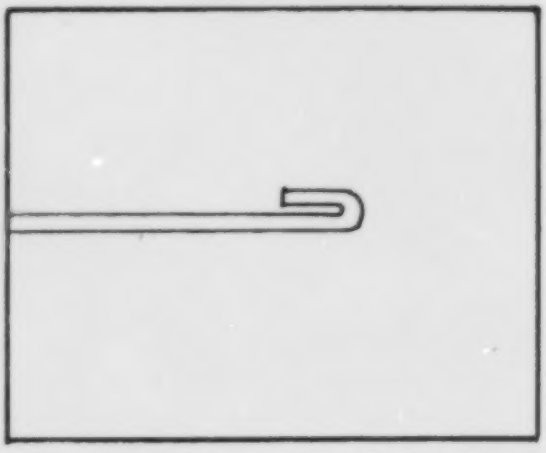
STEP 8 – Release the layout by unscrewing the C-clamp.



STEP 9 – Remove the layout.



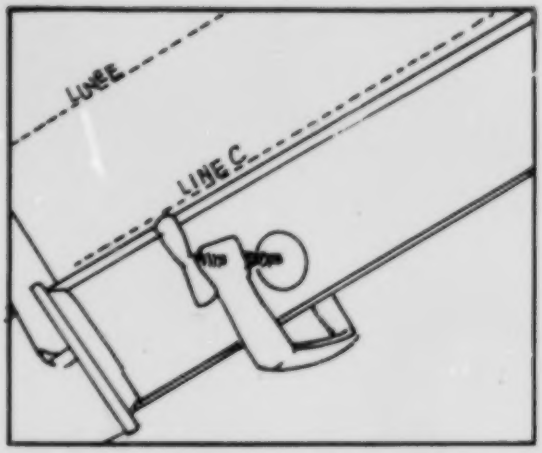
STEP 10 – Using a hand seamer grasp the bent edge in the jaws.



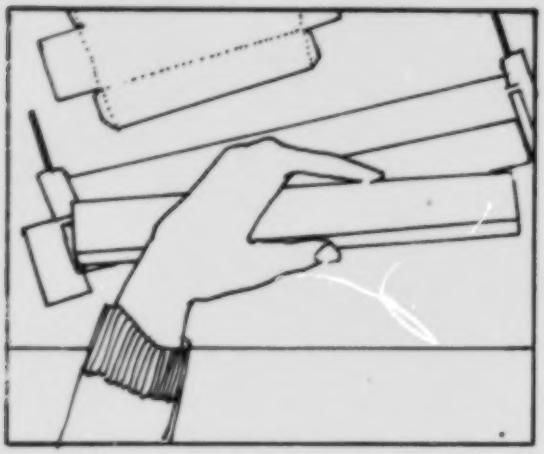
STEP 11 – Fold the edge beyond 90° to form a hem.

53

STEP 12 – Gently tap any unfolded metal with a ball peen hammer.

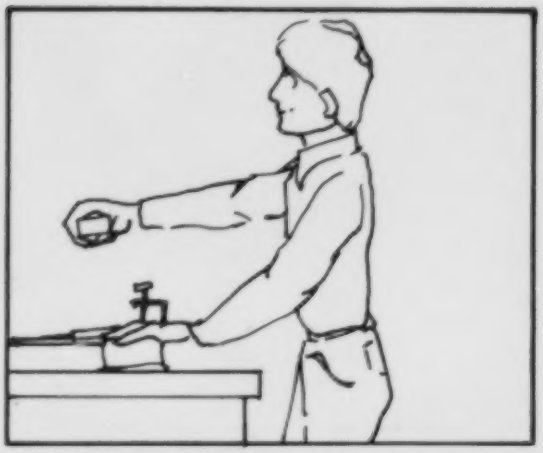


STEP 15 – Check to see that line "C" is in the proper position.

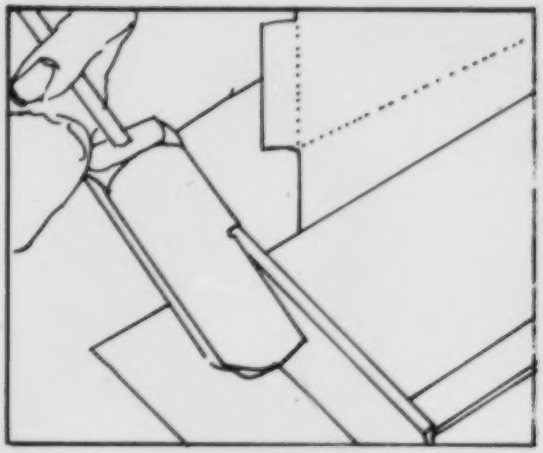


STEP 13 – Leave the brake open and reinsert the layout so that line "C" is flush or even with the edge of the top leaf.

STEP 16 – Raise the bending leaf all the way to fold the metal.



STEP 14 – Holding the layout in place, secure the top leaf in place with the C-clamp.

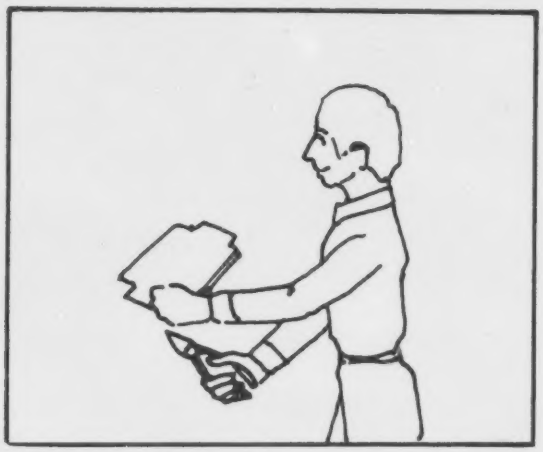


STEP 17 – Lower the bending leaf.

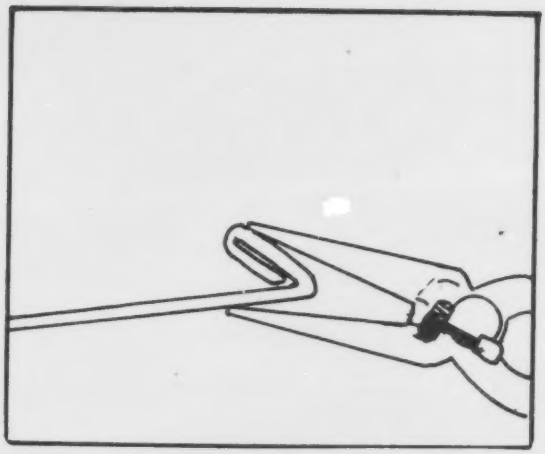
54

STEP 18 – Release the layout by unscrewing the C-clamp.

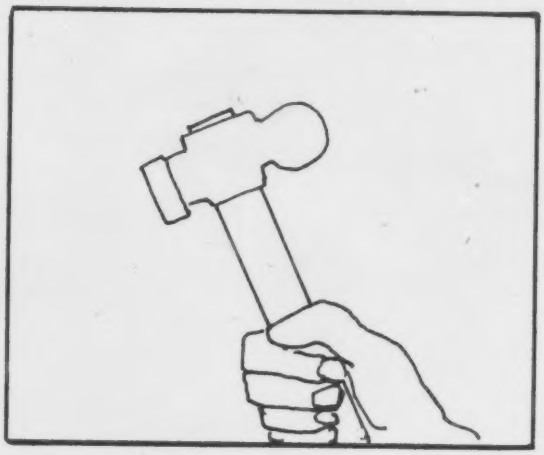
STEP 19 – Remove the sheet metal.



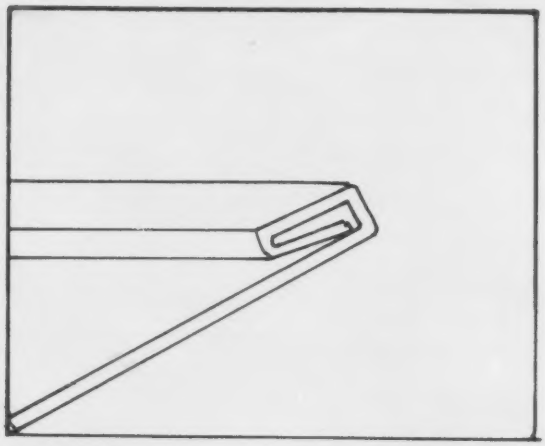
STEP 20 – Using a hand seamer, grasp the bent edge in the jaws.



STEP 21 – Fold the edge beyond 90° to form a hem.



STEP 22 – Gently tap any unfolded metal with a ball peen hammer.



STEP 23 – The completed double hem should look like this.

STEP 24 – Repeat this operation for the other three sides.

Check Point

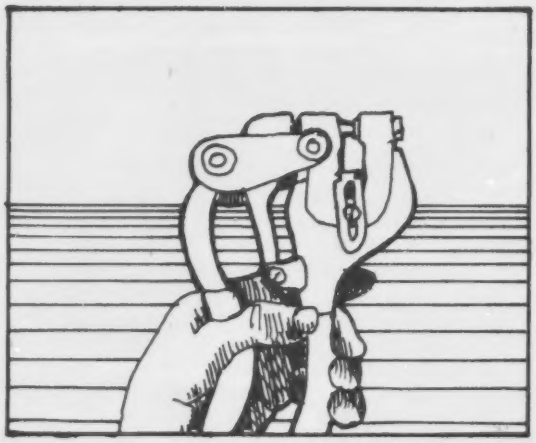
Before continuing to the next phase, check with the shop manager to see if the hem is approved.

If the hem is approved, continue to the next phase.

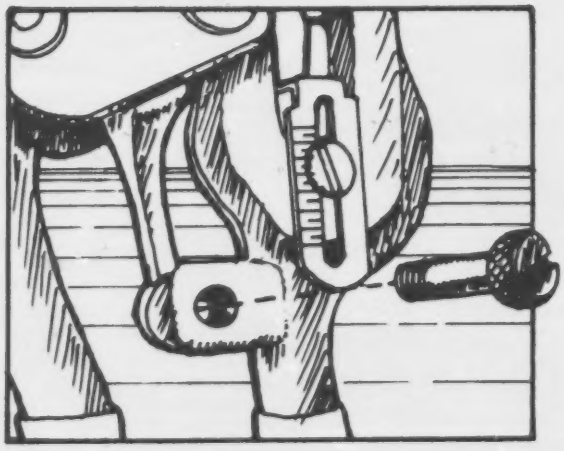
If the hem is not approved, start over after getting the teacher's permission.

Instructional Objective IV

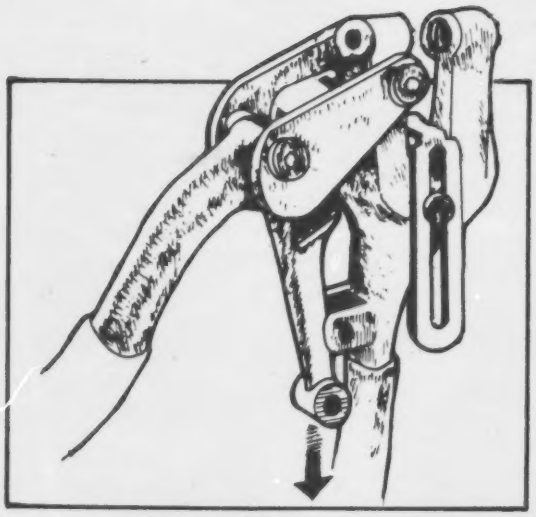
The student will punch holes in the flaps of the box where indicated.



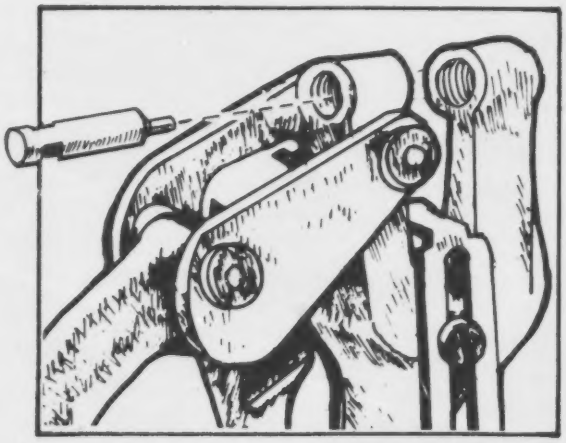
STEP 1 – Obtain the hand punch.



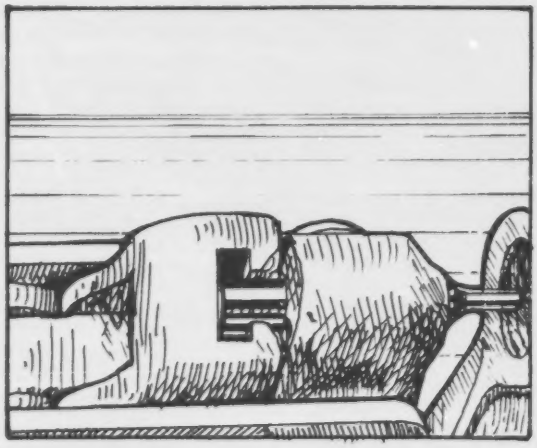
STEP 2 – Remove the back screw from the die-holding lever.



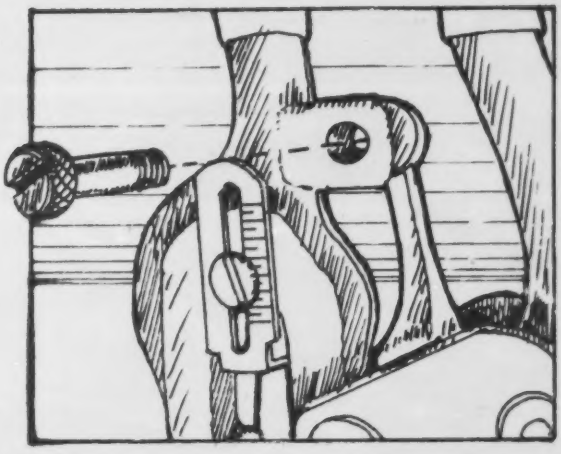
STEP 3 – Slide the lever back.



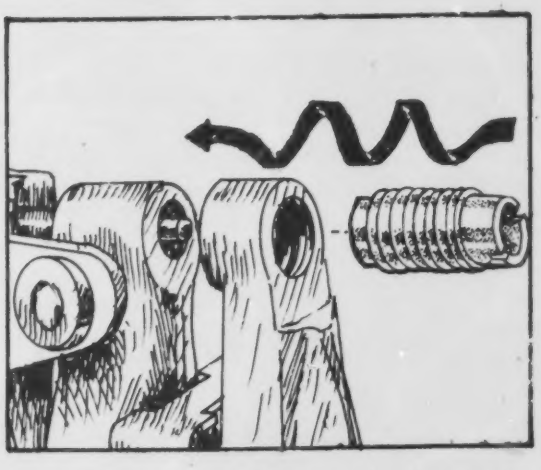
STEP 4 – Insert the 1/8" (.32 cm) die.



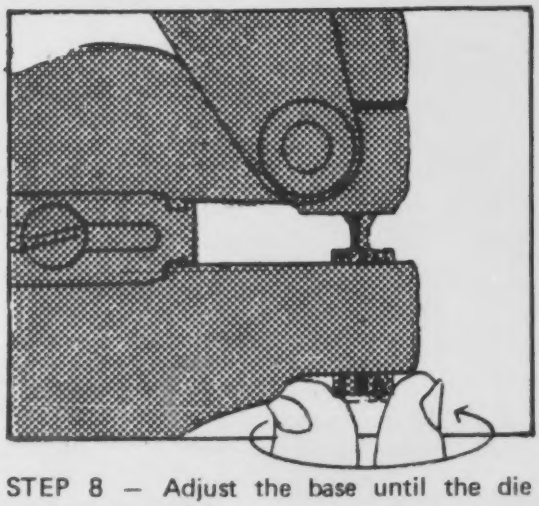
STEP 5 – Slide the lever forward locking the die in place.



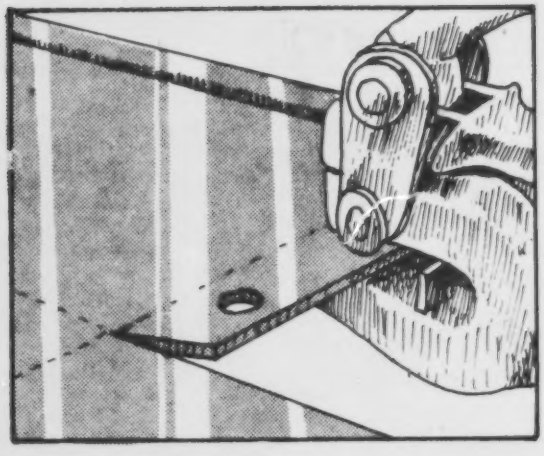
STEP 6 – Reinsert the screw in the die-holding lever.



STEP 7 – Screw the threaded die base in the punch collar.



STEP 8 – Adjust the base until the die punches through it.



STEP 9 – Punch out the hole marks on the flaps.

Check Point

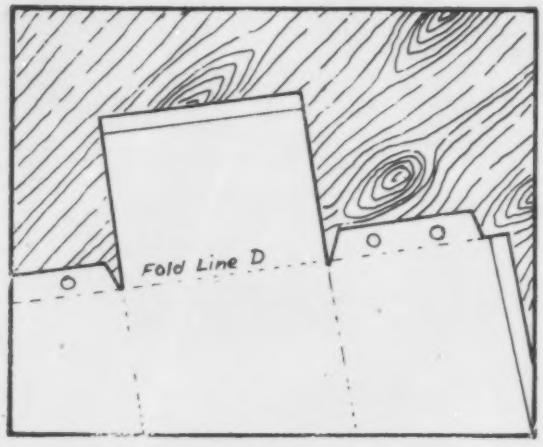
Are all the hole marks punched?

If they are, proceed to the next objective.

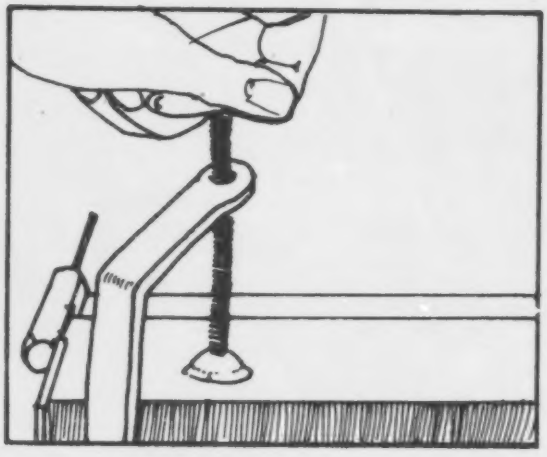
58

Instructional Objective V

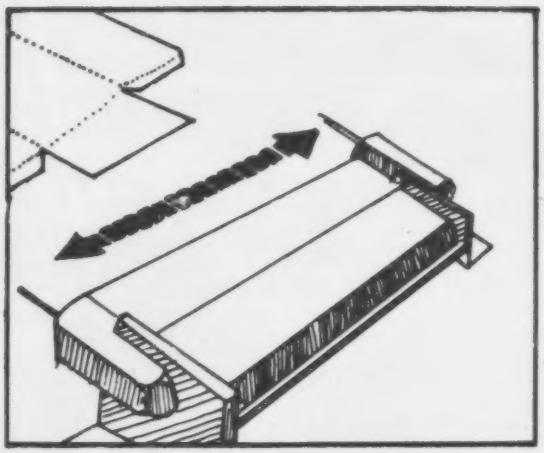
The student will shape and bend the sides of the layout into the shape of a box, using the pan brake.



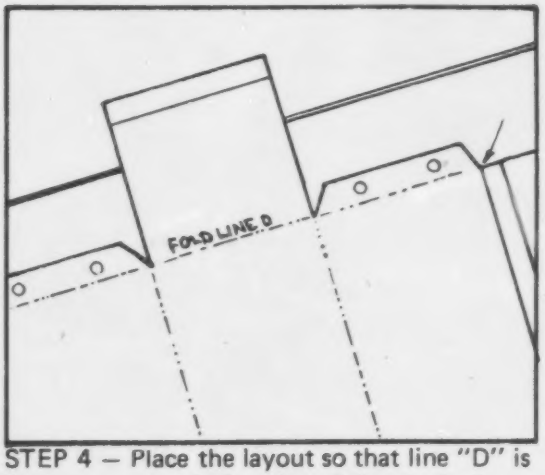
STEP 1 – Locate the side of the layout with line "D."



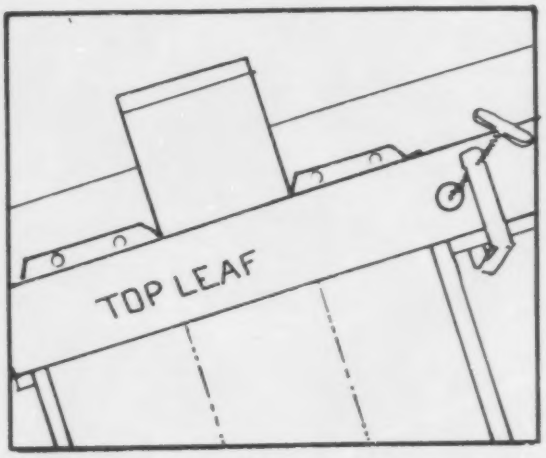
STEP 2 – Open the brake by unscrewing the C-clamp.



STEP 3 – Insert the layout on the long side of the brake (12" – 30.5 cm).

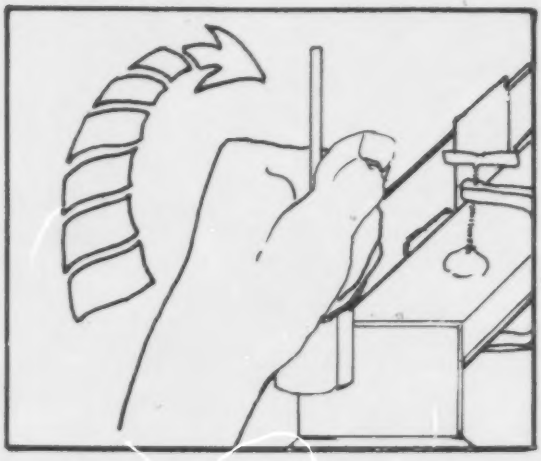


STEP 4 – Place the layout so that line "D" is flush or even with the edge of the top leaf.

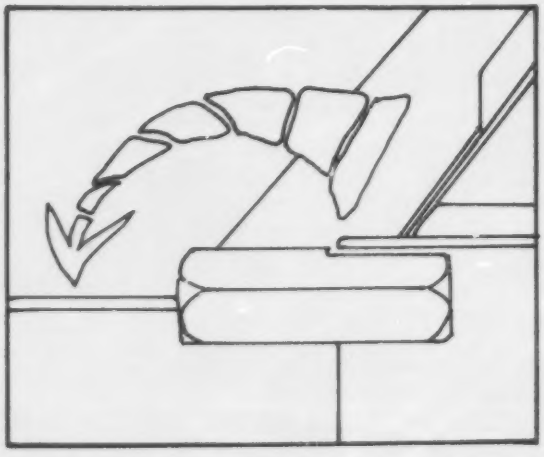


STEP 5 – Hold the layout in place and using the C-clamp, secure the top leaf over the layout line "D".

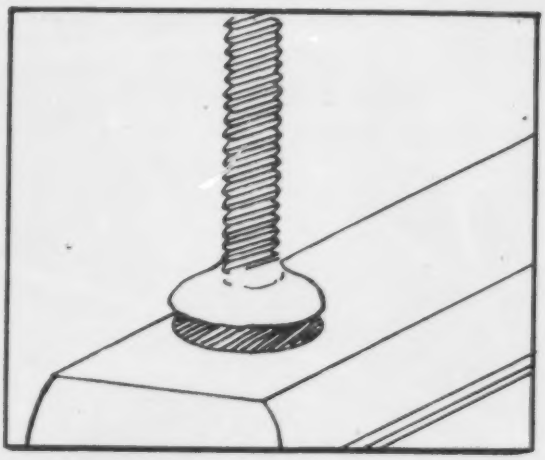
STEP 6 – Check to insure that line "D" is in the proper position.



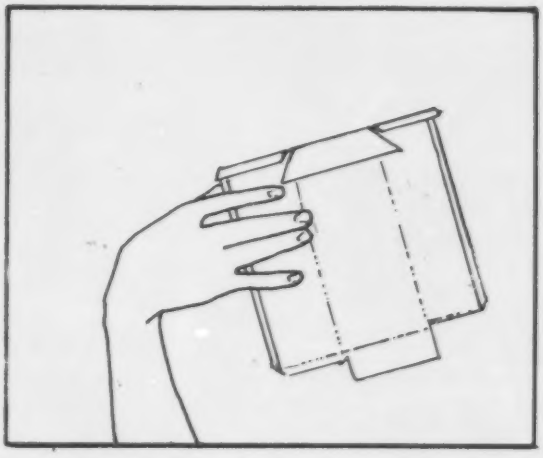
STEP 7 – Raise the bending leaf to a position parallel to the floor to form a ninety degree bend.



STEP 8 – Lower the bending leaf.



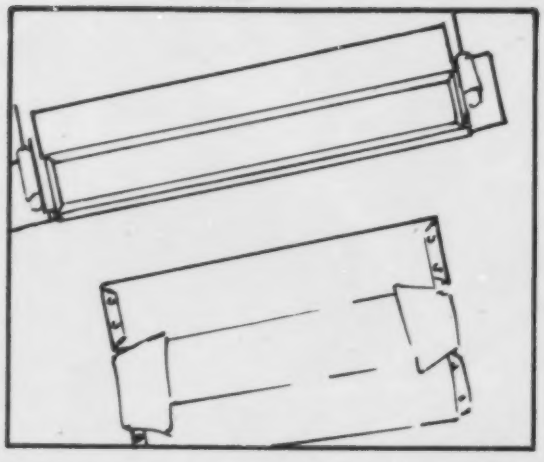
STEP 9 – Release the layout by unscrewing the C-clamps.



STEP 10 – Remove the layout.

STEP 11 – Repeat the operation for the opposite side with the other line "D."

80



STEP 12 – Using the short end (10" – 25.4 cm) of the brake, repeat the operation for the other two sides, line "E."

Check Point

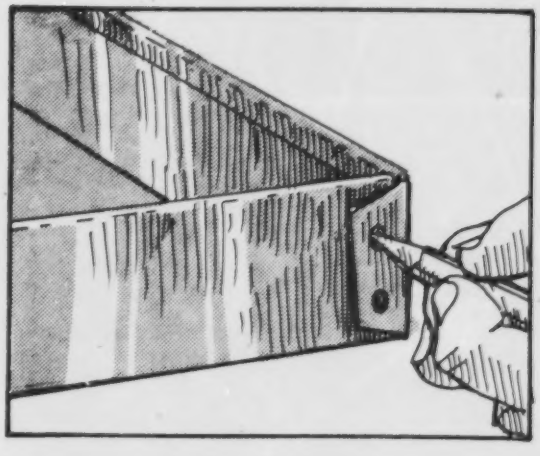
Before continuing to the next phase, check with the shop supervisor to see if the box is in the proper shape.

If the box is approved, continue to the next phase.

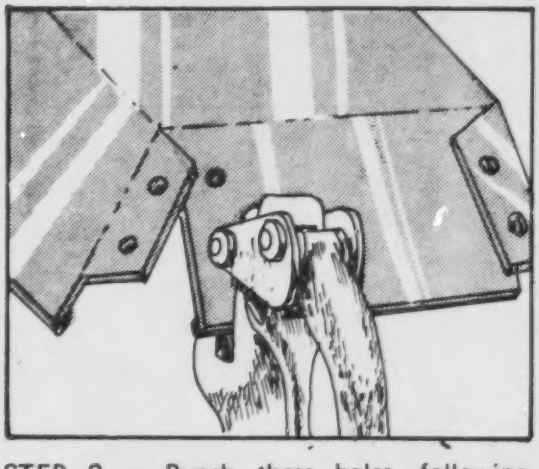
If the box is not approved, determine the error; go back to the directions and correct the mistake.

Instructional Objective VI

The student will punch holes in the ends of the box.



STEP 1 – Shape the box and, using a pencil, draw a circle through the flap hole onto the box's ends.



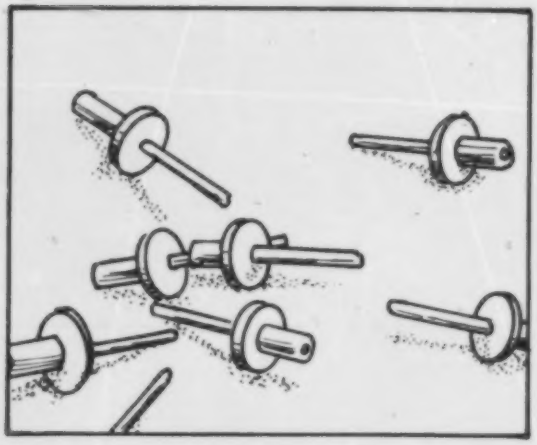
STEP 2 – Punch these holes, following directions.

Check Point

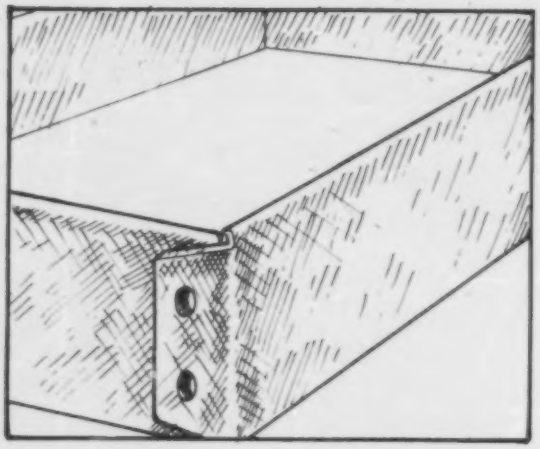
Check to see that all holes line up when box is in proper shape.

Instructional Objective VII

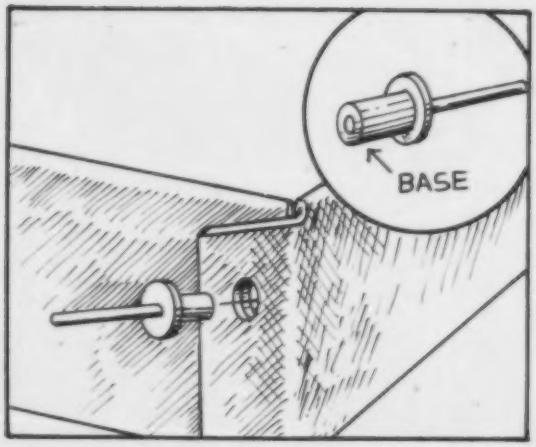
The student will rivet the box together, using pop rivets and a pop rivet gun.



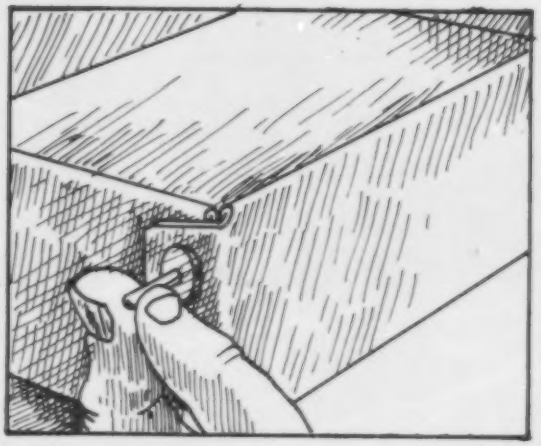
STEP 1 – Secure pop rivets.



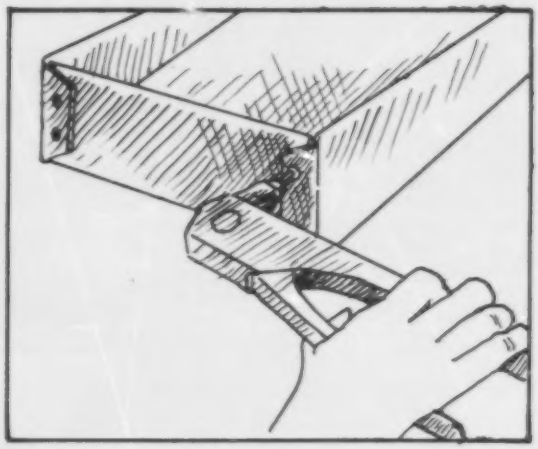
STEP 2 – Fit two corners of the box together, flap on the outside, holes lined up.



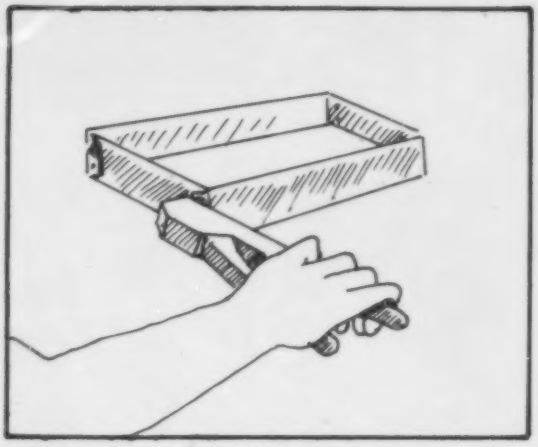
STEP 3 – Put the rivet into the hole from the outside, base first.



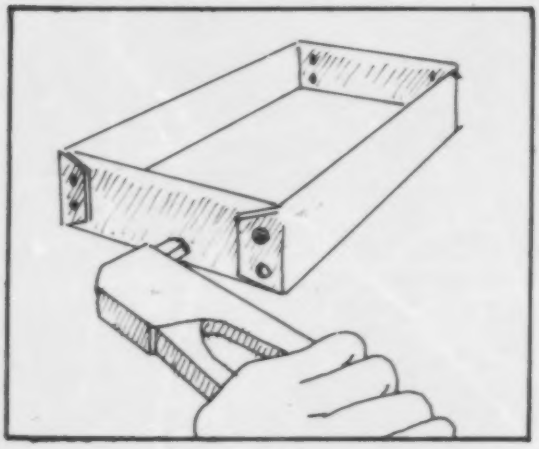
STEP 4 – Hold the rivet in place.



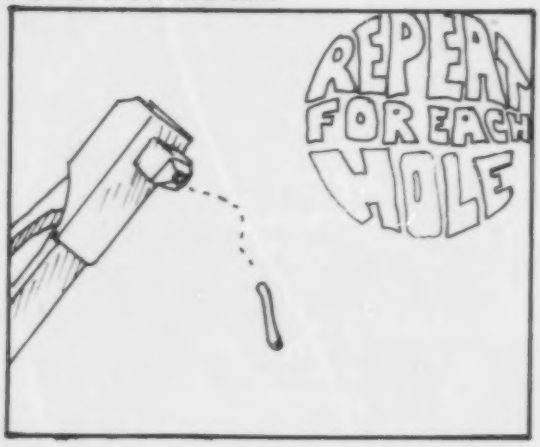
STEP 5 – Insert the shaft of the rivet into the pop rivet gun while the lever is raised or open.



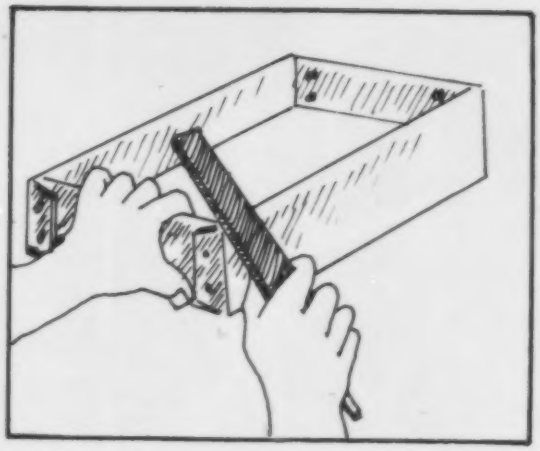
STEP 6 – Hold down on the rivet and squeeze the levers together to clinch the rivet.



STEP 7 – Repeat the squeezing until the shaft of the rivet breaks.



STEP 8 – Allow the shaft to fall from the gun and repeat the operation for the other seven holes.



STEP 9 – Remove all burrs from rivets or corners of the box with a few strokes of the file.

Check Point

Give the box to the shop supervisor for approval.

If the box is approved, clean up the work area and turn in the tools.

If the box is not approved, determine where the error was made and correct it.

STUDENT
LEARNING ACTIVITY GUIDE

SHEET METAL SHOP HELPER

64

INTRODUCTION

The sheet metal helper is to assist the sheet metal mechanic in all steps of fabricating the paper and metal layouts. This involves assisting in the cutting, bending, forming, shaping, and riveting of the layout into a first-aid kit.

GOAL

Upon completion of this activity, the student will have a knowledge of some of the skills necessary to be a sheet metal mechanic's helper.

DIRECTIONS

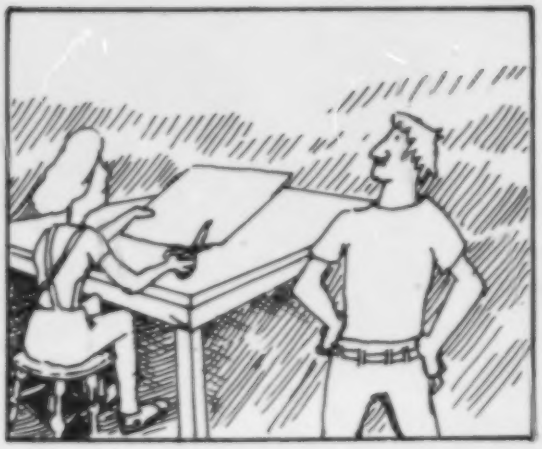
The student must follow the directions of the sheet metal shop mechanic and assist in all activities performed.

MATERIALS

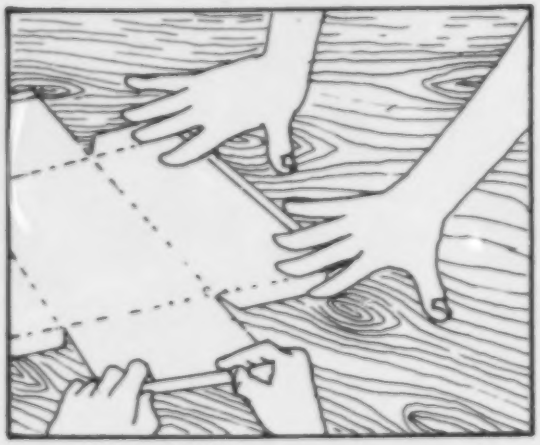
Safety goggles, gloves

Instructional Objective 1

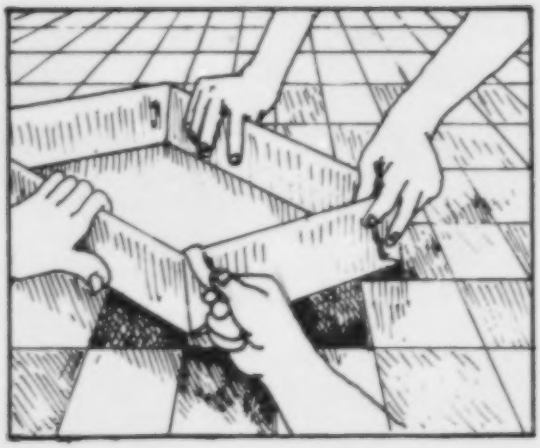
The student will help cut, shape, and construct a box from the paper layout, following the sheet metal mechanic's directions.



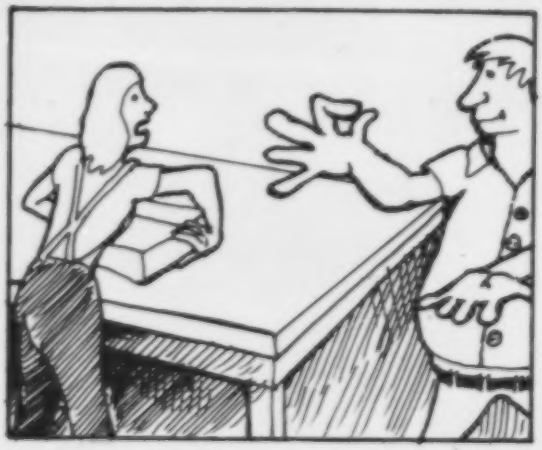
STEP 1 – Assist the sheet metal mechanic in any way necessary in the cutting of the layout.



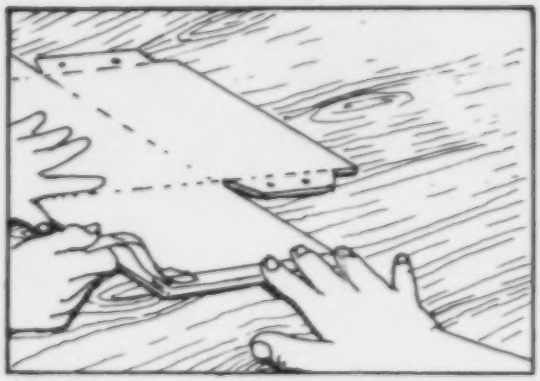
STEP 2 – Help the mechanic fold the hem.



STEP 3 – Assist in the taping of the hem.



STEP 4 – Assist in forming the box.



STEP 5 – Help tape the box together.

Check Point

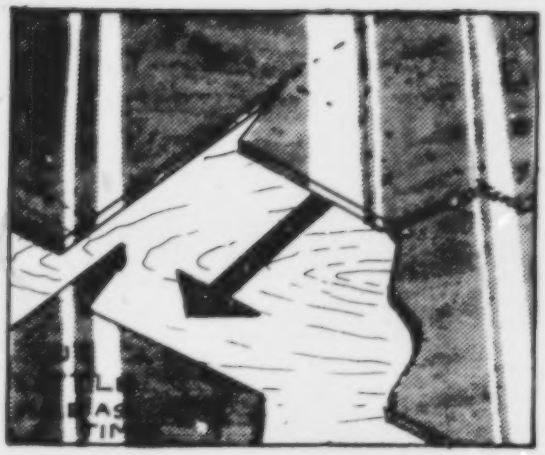
Ask shop supervisor to come to your work area to check completed paper box.

Instructional Objective II

The student will assist the mechanic in cutting out the sheet metal layout.

STEP 1 – Use safety goggles and gloves.

STEP 2 – Assist in cutting out the layout.



STEP 3 – Remove the excess metal and keep the scrap edges from getting in the way.

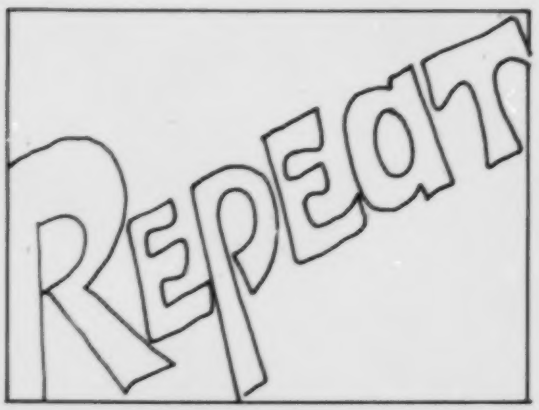
Check Point

Ask shop supervisor to check layout.

Instructional Objective III

The student will assist in double hemming the side edges.

STEP 1 – Assist the mechanic in inserting and holding the metal in the pan brake.



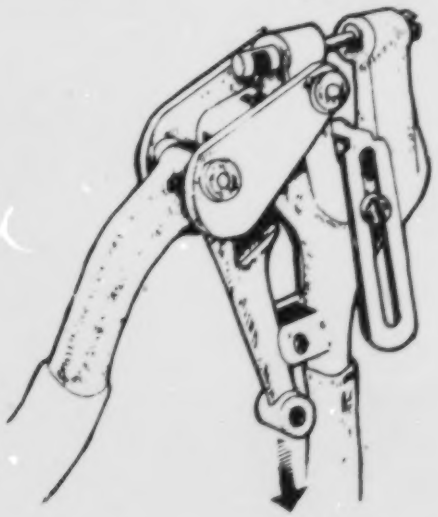
STEP 2 – Repeat the holding procedures with each bend.

Check Point

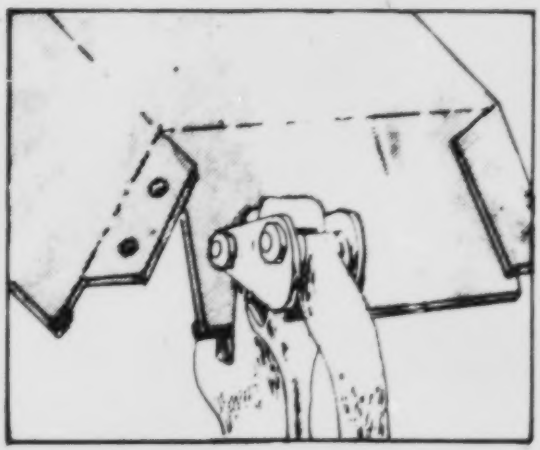
Ask shop supervisor to check the completed double hem.

Instructional Objective IV

The student will assist in punching the holes in the metal layout.



STEP 1 – Help the mechanic set up the punch.



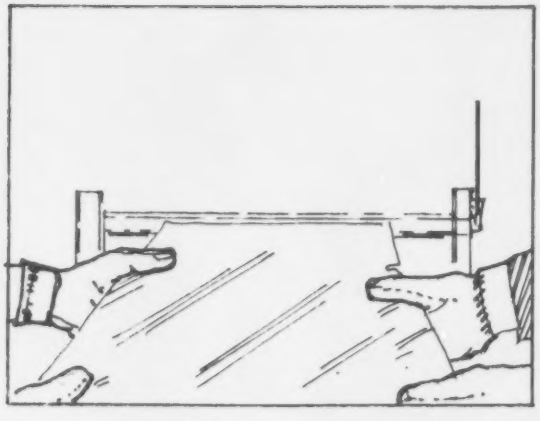
STEP 2 – Hold the box while the flap holes are punched.

Check Point

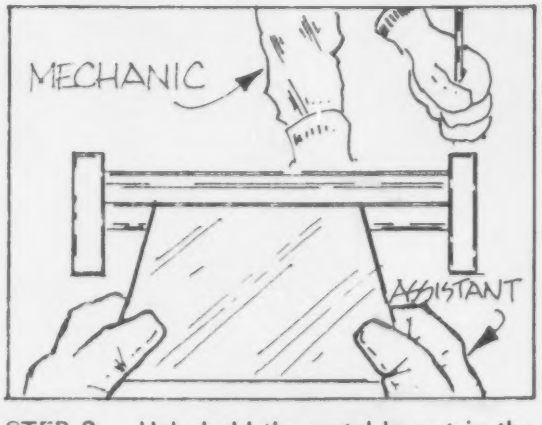
Be sure all holes are accurately lined up.

Instructional Objective V

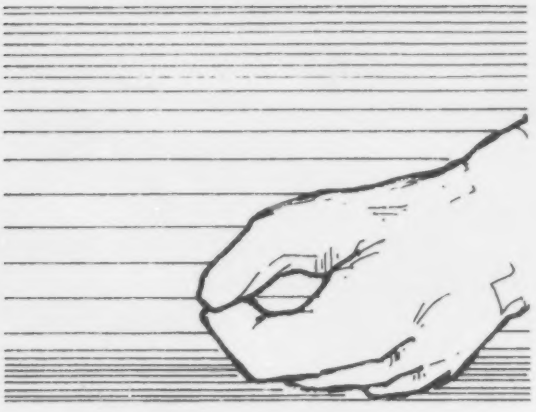
The student will assist in the shaping and bending of the sheet metal layout.



STEP 1 – Assist the mechanic in inserting the layout into the brake.



STEP 2 – Help hold the metal layout in the brake.



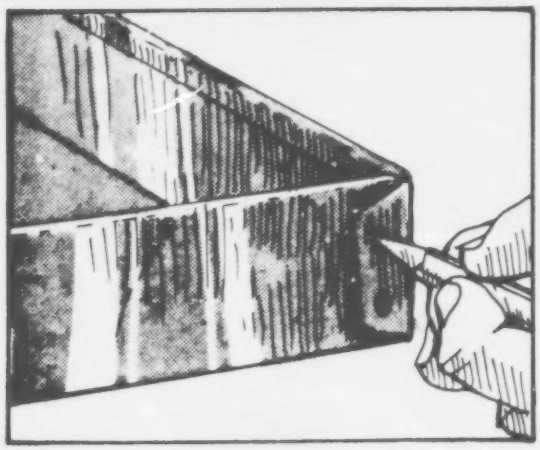
STEP 3 – Assist in any other way necessary.

Check Point

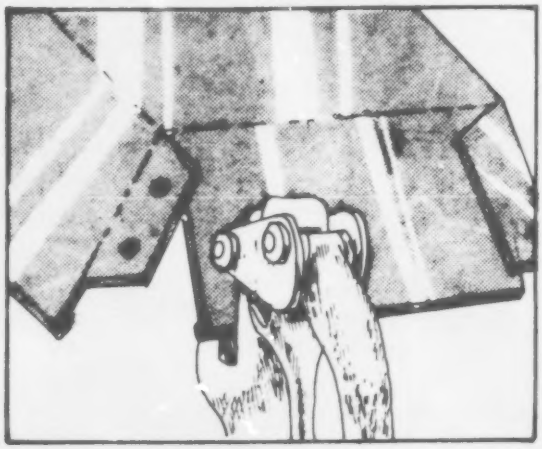
Have instructor check completed work.

Instructional Objective VI

The student will assist in punching holes in the ends of the box.



STEP 1 – Hold the box in the proper shape while the mechanic draws circles for the matching holes in the ends.



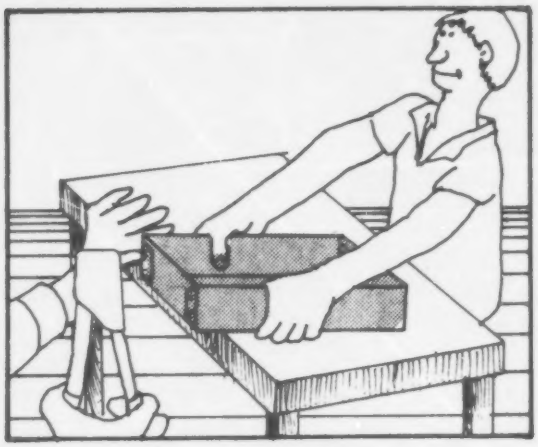
STEP 2 – Hold the box while the other holes are punched.

Check Point

Ask shop supervisor to check completed work.

Instructional Objective VII

The student will assist in riveting the box together.



STEP 1 – Hold the sides of the box together while the mechanic rivets it together.

Check Point

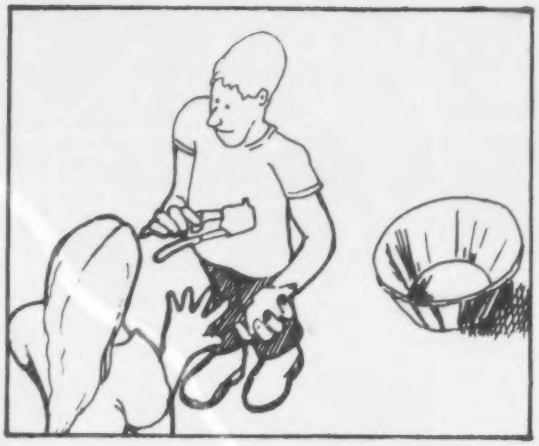
Ask shop supervisor to check work.

Instructional Objective VIII

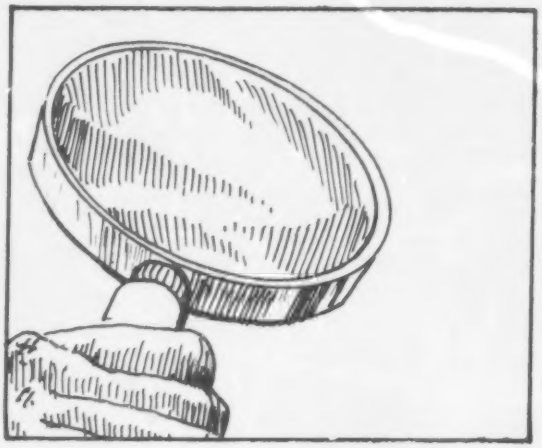
The student will clean up the work area and return all tools to tool clerk.

STEP 1 – Pick up all scraps, trash, etc., and place them in the proper trash containers.

STEP 2 – Return all excess materials to the order clerk.



STEP 3 – Return all tools and equipment to tool clerk.



STEP 4 – Check the area to see that everything is in its proper place.

Check Point

Have your shop supervisor inspect your work area for cleanliness.

STUDENT
LEARNING ACTIVITY GUIDE

PAINTERS

INTRODUCTION

The painters are responsible for finishing the box by painting it white on the outside and then painting a red cross on the sides.

GOAL

Upon completion of this activity, the student will have some understanding of the skills of a brush painter.

DIRECTIONS

The student must follow the directions carefully, completing each step before going on to the next step. If any problem arises, ask the shop supervisor for help.

MATERIALS

Newspapers, screwdriver, white paint, red paint, 3" (7.6 cm) brush, ½" (1.27 cm) brush, rags, paint thinner, stir stick, 16 oz. (.45 kg) empty can.

Instructional Objective 1

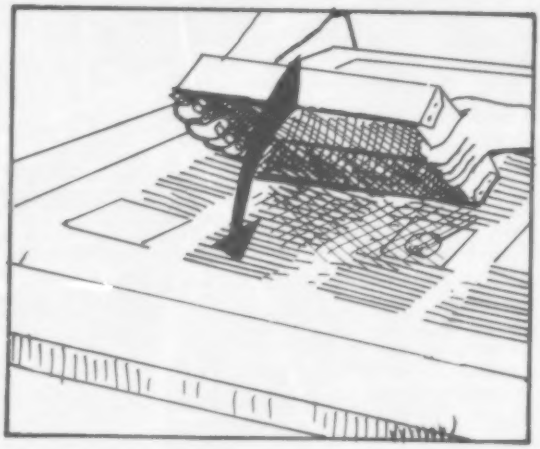
The student will paint the outside of the box white.

STEP 1 – Spread the newspapers over the work area.

STEP 2 – Shake the can of paint.

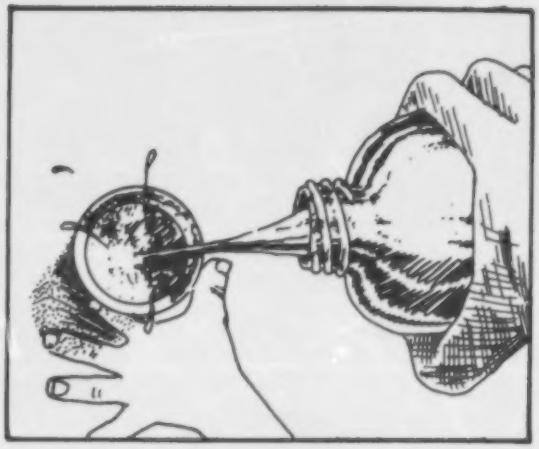
STEP 3 – Using the screwdriver, pry open the can of paint.

STEP 4 – Carefully stir the paint thoroughly.

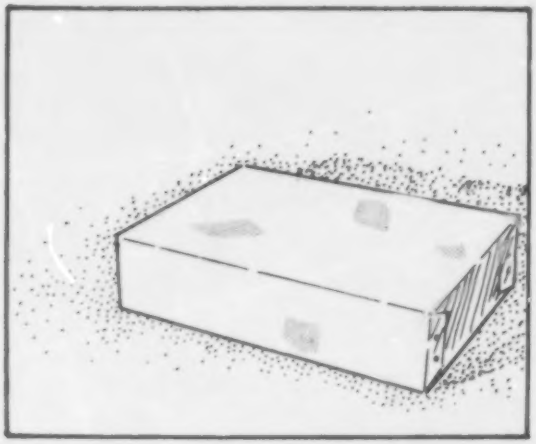


STEP 5 – Turn the box upside down on the paper.

STEP 6 – Using the 3" (7.6 cm) brush, paint the outside of the box with long even strokes.

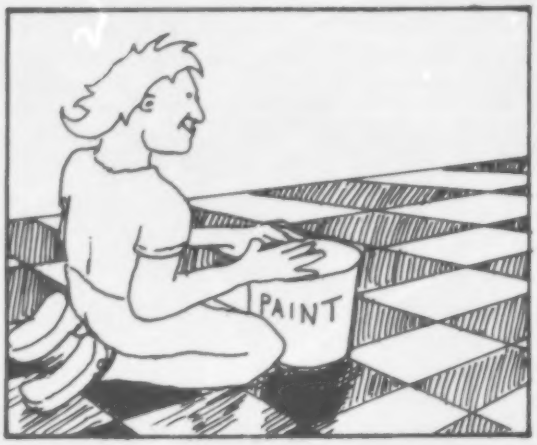


STEP 9 – Pour several ounces of thinner into the empty can.

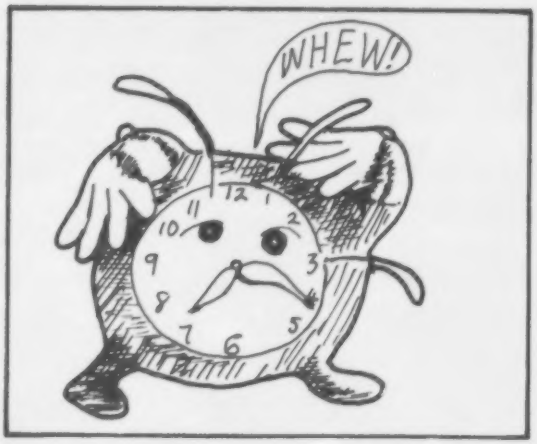


STEP 7 – Check to see if any spots were missed.

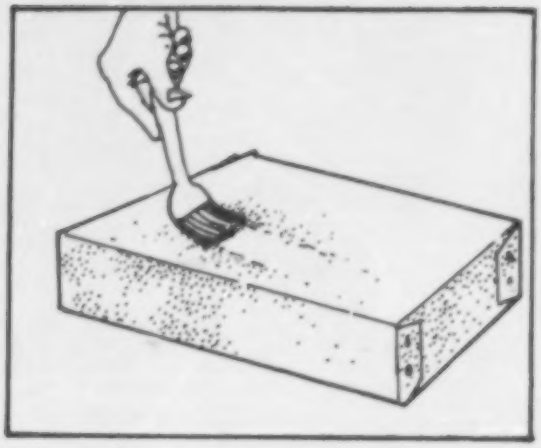
STEP 10 – Wash the paint from the brush.



STEP 8 – Close paint can.



STEP 11 – Allow the paint 20-24 hours to dry.



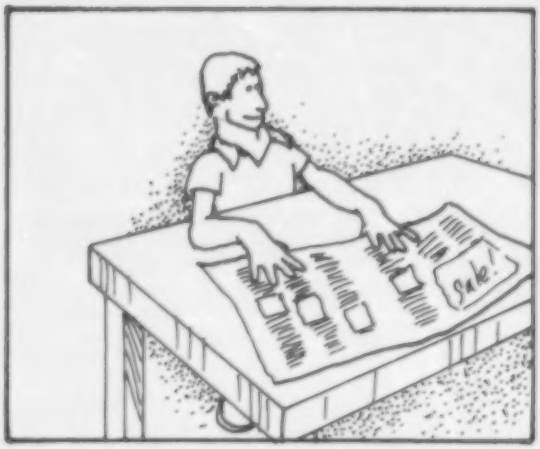
STEP 12 – Apply a second coat of paint if necessary.

Check Point

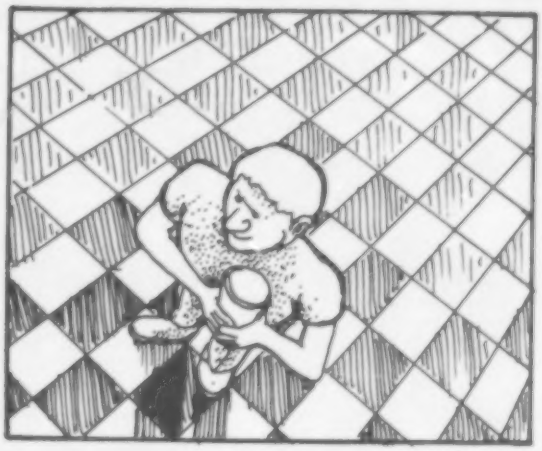
Check with shop supervisor for approval.

Instructional Objective II

The student will paint a red cross on the box's four sides.



STEP 1 – Spread newspaper over work area.



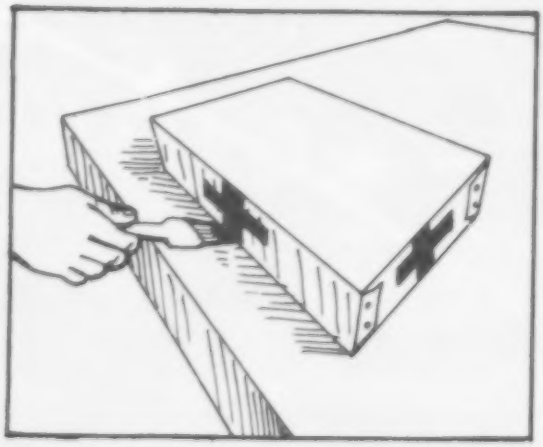
STEP 2 – Shake can.

STEP 3 – Open can with screwdriver.

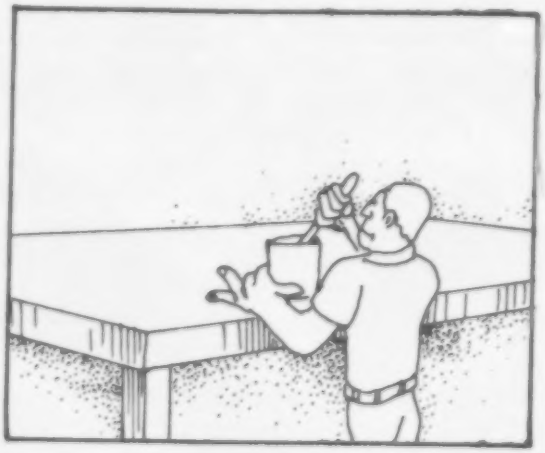
STEP 6 – Close paint can.

STEP 4 – Stir paint with stir stick.

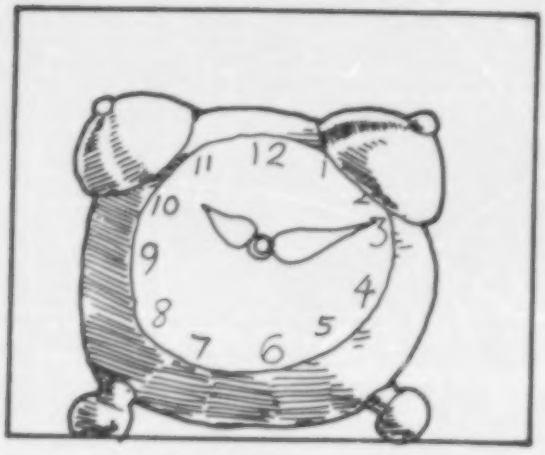
STEP 7 – Pour several ounces of paint thinner into empty can.



STEP 5 – Using ½" (1.27 cm) brush, carefully paint a red cross on each side of the box.



STEP 8 – Wash brush.



STEP 9 – Allow 20-24 hours for paint to dry.

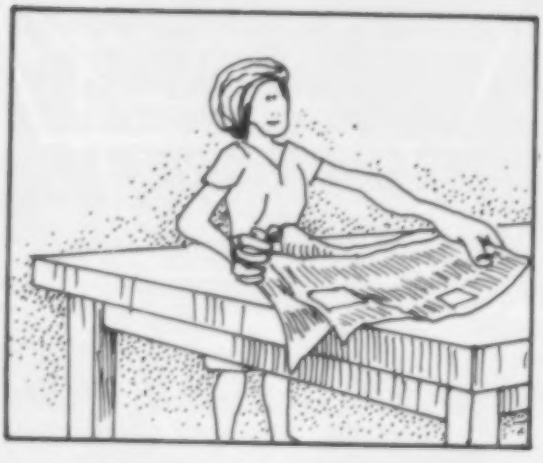
STEP 10 – Apply second coat of paint if necessary.

Check Point

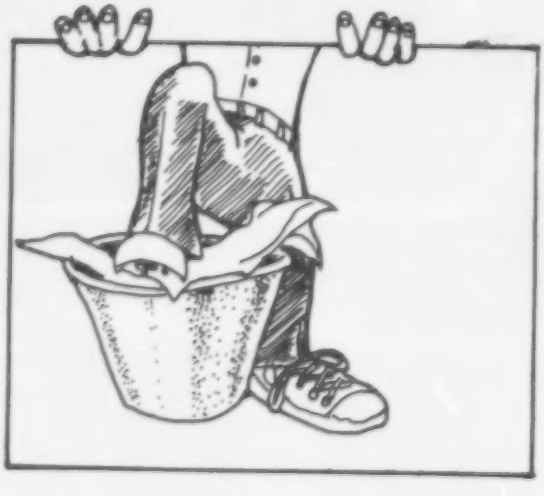
Check with shop supervisor for approval.

Instructional Objective III

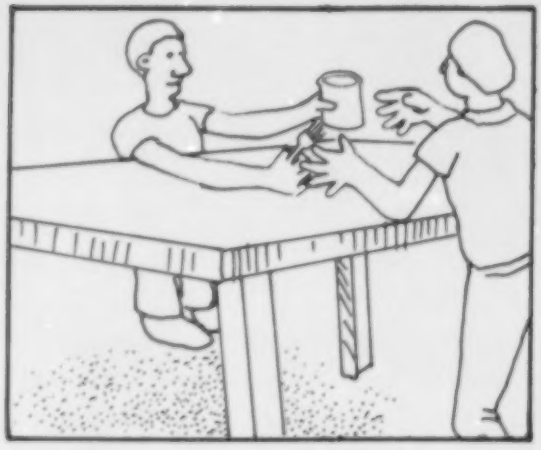
The student will clean up work area and return tools to tool clerk.



STEP 1 – When task has been approved, clean up work area.



STEP 2 – Place used newspapers, trash, etc. in proper containers.



STEP 3 – Return tools to tool clerk.

Check Point

Have your shop supervisor inspect your work area for cleanliness.

STUDENT
LEARNING ACTIVITY GUIDE

HAND PACKAGER

80

INTRODUCTION

The hand packager is responsible for taking the completed first-aid box and placing the first-aid supplies in it. The items are to be arranged so that they fit easily and yet are all visible.

GOALS

Upon completion of this activity, the student will have a better understanding of the activities of a hand packager.

DIRECTIONS

The student must follow the directions carefully, completing each step before continuing to the next step. If any problem arises, ask the shop supervisor for help.

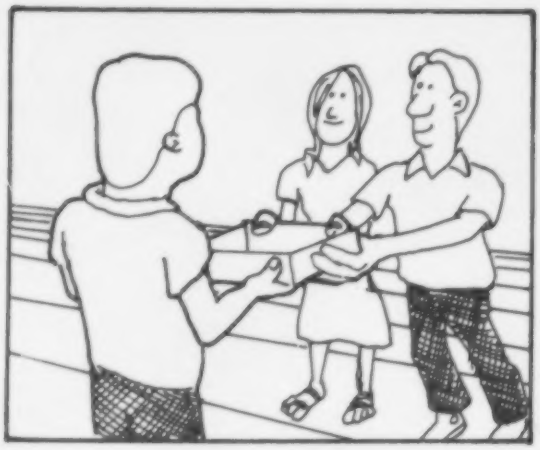
MATERIALS

First-aid items, first-aid box

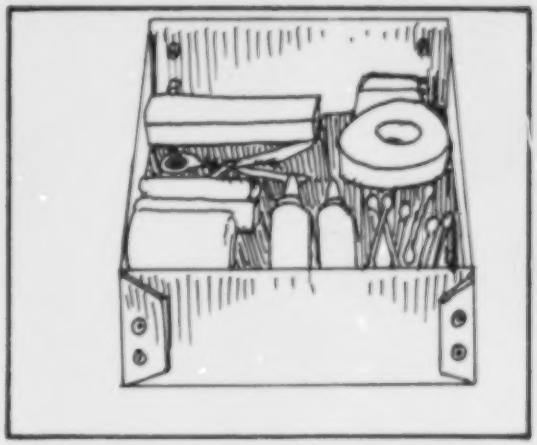
Instructional Objective 1

The student will package the first-aid items in the first-aid box.

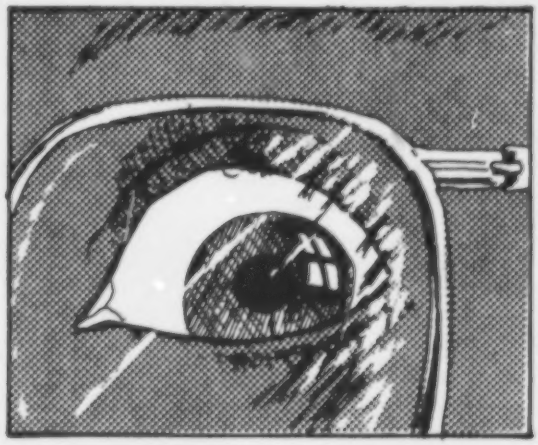
STEP 1 – Secure the first-aid items.



STEP 2 – Secure the first-aid box from the painters.



STEP 3 – Pack each item into the completed box.



STEP 4 – Arrange the items so that all are visible.

Check Point

Turn the box over to the shop supervisor when completed.

STUDENT
LEARNING ACTIVITY GUIDE

SAFETY INSPECTOR

INTRODUCTION

The safety inspector is responsible for checking all machines, equipment, and working conditions for hazards to workers to prevent accidents and fires. The inspector reports all unsafe conditions to the shop supervisor and makes recommendations for correcting these conditions.

GOAL

Upon completion of this activity, the student will have a better understanding of safe shop practices and will better understand the job of a safety inspector.

DIRECTIONS

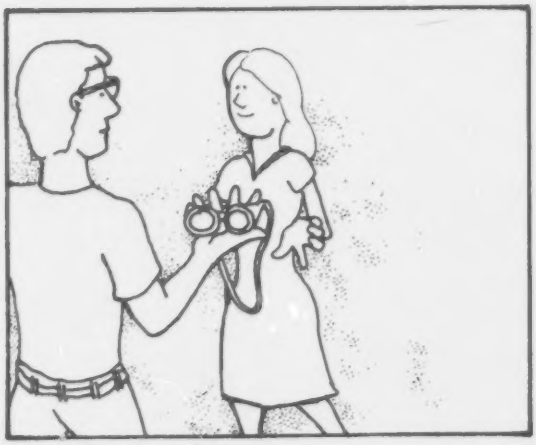
The student must follow the directions carefully, completing each step before proceeding to the next step.

MATERIALS

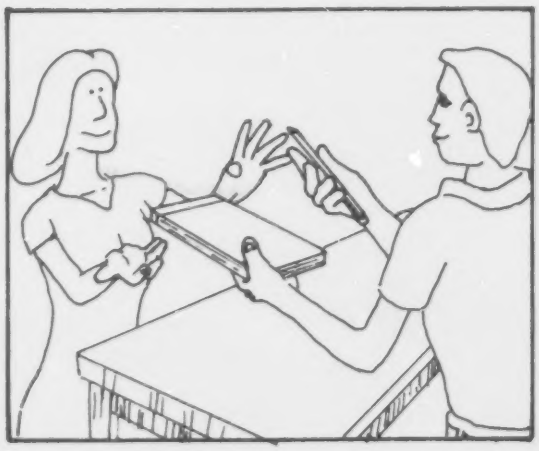
Pencil, pad, safety goggles

Instructional Objective 1

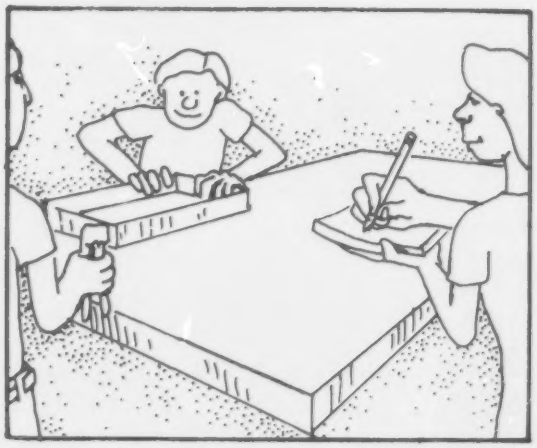
The student will check and inspect each work area two or three times an hour for safety hazards.



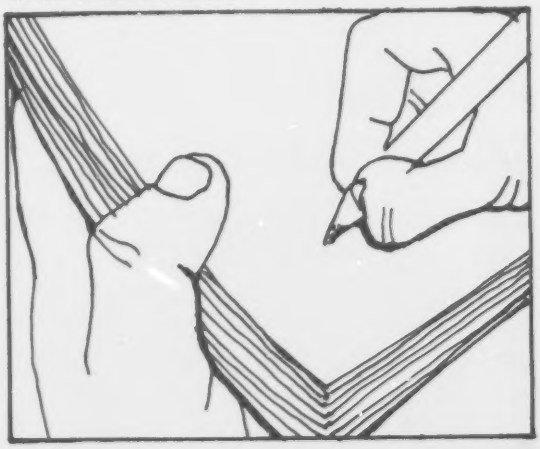
STEP 1 – Use safety goggles in work areas.



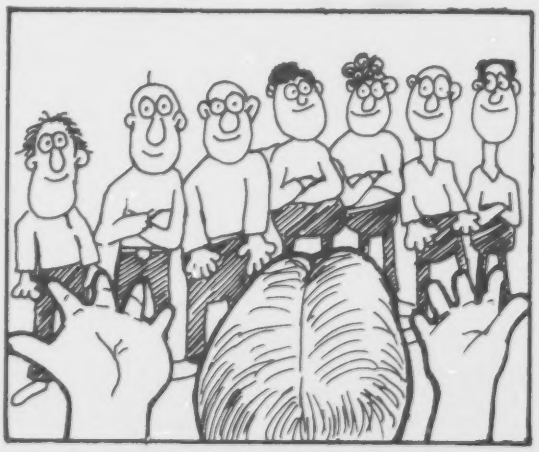
STEP 2 – Secure materials – pencil and pad.



STEP 3 – Inspect each work area two or three times an hour.



STEP 4 – List any unsafe conditions or practices observed.



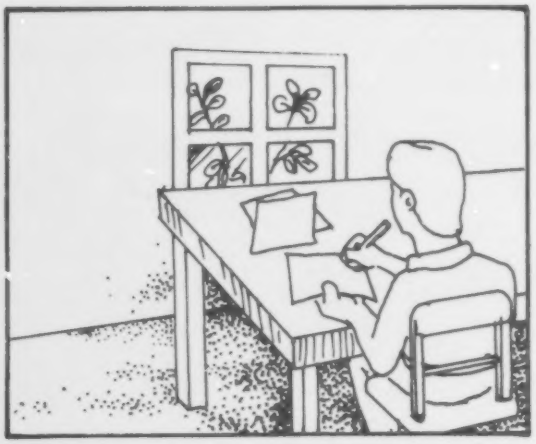
STEP 5 – Call these practices to the attention of the workers.

Check Point

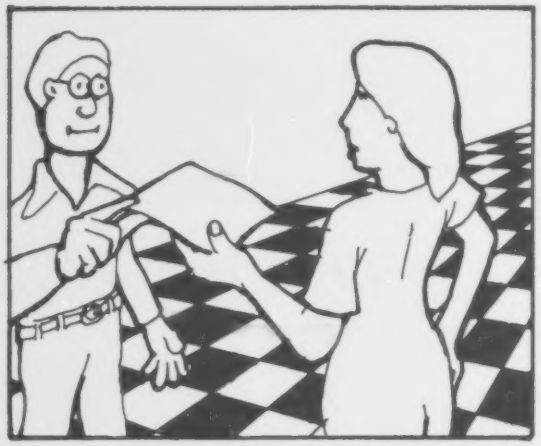
Report all unsafe conditions to shop supervisor immediately.

Instructional Objective 11

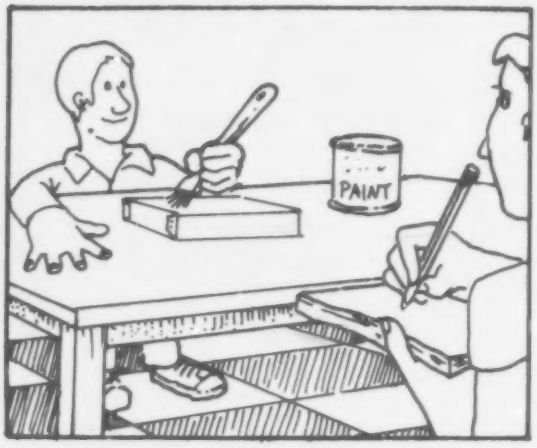
The student will write recommendations for correcting all unsafe conditions.



STEP 1 – Using the lists of unsafe conditions, write a recommendation for correcting each of these conditions.



STEP 2 – Turn the recommendations over to the shop supervisor.



STEP 3 – Continue inspecting until activity is completed.

Check Point

Be sure all clean-up activities are conducted safely – especially the cleaning of the painting materials.

STUDENT
LEARNING ACTIVITY GUIDE

SALES REPRESENTATIVE

INTRODUCTION

The students will act as sales representative for the class if more than one kit is produced in this activity. The price for the kits would be made high enough to cover the cost of the activity.

GOAL

The students will develop an understanding of the activities of a sales representative.

DIRECTIONS

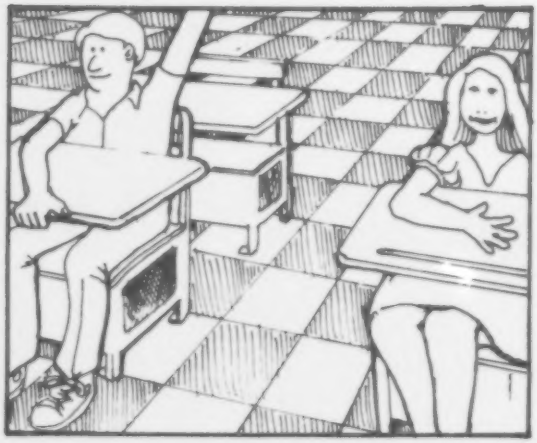
The students will follow the directions carefully.

MATERIALS

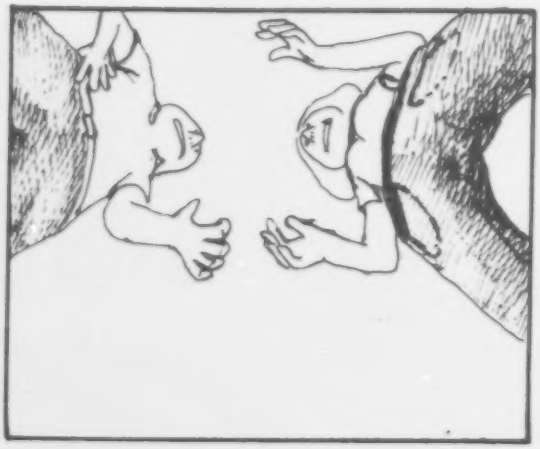
Paper, pencil

Instructional Objective 1

The students will sell the activity first-aid kits produced.



STEP 1 – As a class, the students will decide on a price for the first-aid kits.



STEP 2 – As a class, the students will decide how many kits will be sold.

STEP 3 – The student will sell the kits to family, other students, etc.

Check Point

Turn the money in to the teacher.

90

STUDENT
LEARNING ACTIVITY GUIDE

SHOP SUPERVISOR

INTRODUCTION

The shop foreman supervises and coordinates the activities of the workers, orders materials and equipment necessary to perform the activity, and inspects the work in progress and the finished product.

GOAL

The student will develop an understanding of the activities of a shop supervisor.

DIRECTIONS

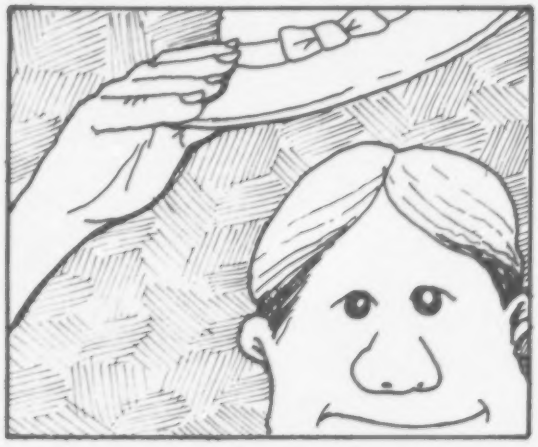
Follow all directions carefully, step-by-step. In some cases, the student may have to use a personal judgment. If any problems arise that the student cannot handle, take them to the teacher.

MATERIALS

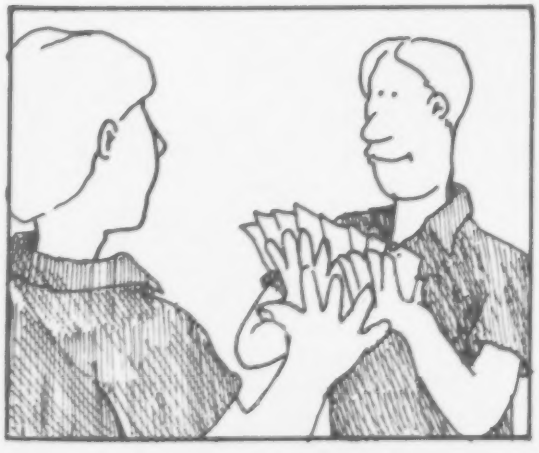
Pen and pad

Instructional Objective 1

Given the teacher's go-ahead, check to see that each student has an activity card.

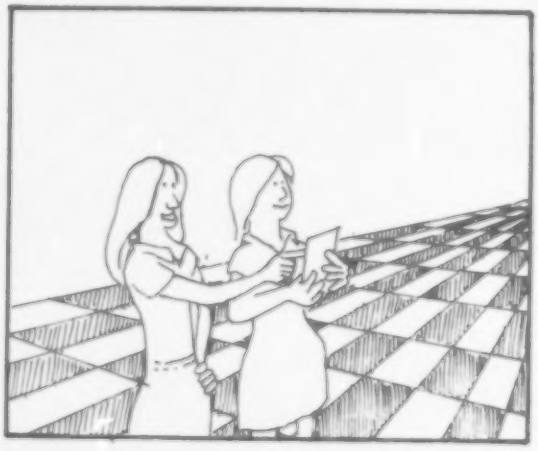


STEP 1 – The supervisor has charge of the activity.

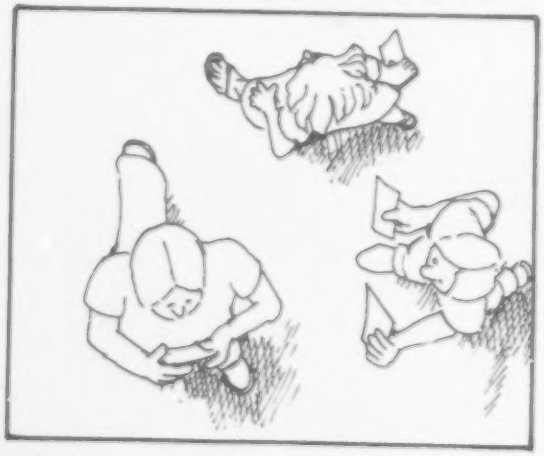


STEP 2 – Instruct each student to select an activity card.

STEP 3 – Have the students read their cards.



STEP 4 – If anyone has questions, try to answer them or seek help from the instructor.



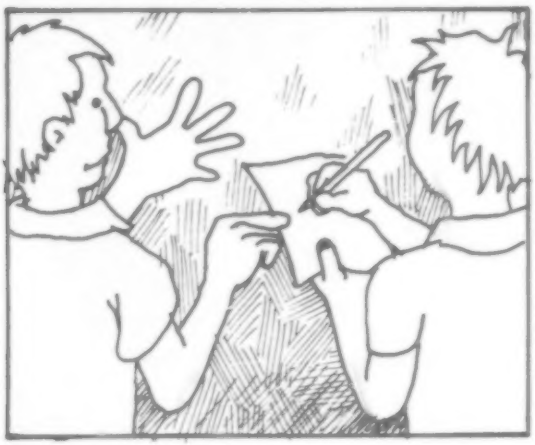
STEP 5 – Have the students go to the work areas indicated on their cards.

Check Point

You will be responsible for every person at his/her job.

Instructional Objective II

The student will determine what materials will be needed and order them.



STEP 1 — Ask the teacher to determine the number of first-aid kits to be made.

STEP 2 – Using this number, determine the materials necessary for the activity. The following table will be helpful:

1 Kit:

- *1 sheet construction paper 14" x 18" (35.6 cm x 45.7 cm)
- 1 pencil per person
- 1 roll ¾" (1.9 cm) masking tape
- 1 roll ½" (1.27 cm) scotch tape
- *1 sheet 28 gauge sheet metal 14" x 18" (35.6 cm x 45.7 cm)
- 2 blue pens
- 2 red pens
- 2 black pens
- *10 pop rivets ¼" x 1/8" dia. (.64 cm x .32 cm)
- *1 can white paint, ½ pt. (.24 l)
- *1 can red paint, ½ pt. (.24 l)
- 1 empty can – 16 oz. (.45 kg)
- *1 rag
- 1 stir stick
- *1 used newspaper
- 5 notepads
- Assorted first-aid supplies

*These items will need to be increased if more than 1 kit is constructed.

STEP 3 – Take the completed list to the order clerk.

STEP 4 – Instruct the order clerk to fill out an order.

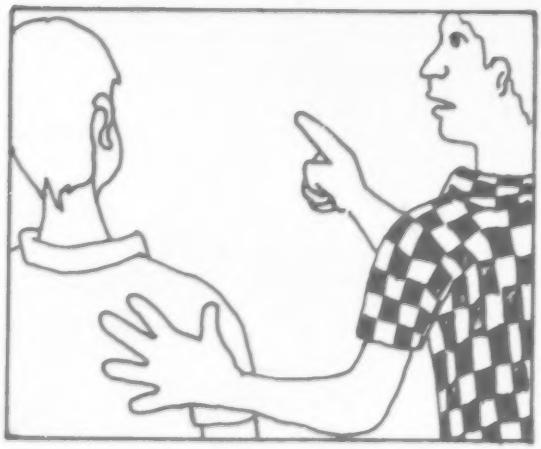
Check Point

Check the clerk's order when he/she has completed the requisition (order).

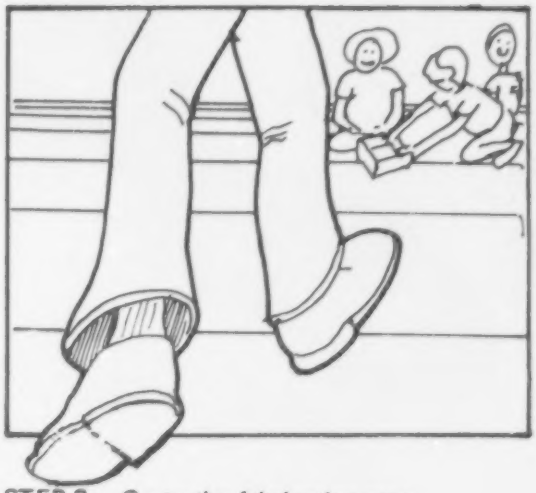
Instructional Objective III

The supervisor will instruct the students to obtain the equipment and tools necessary to complete the activity.

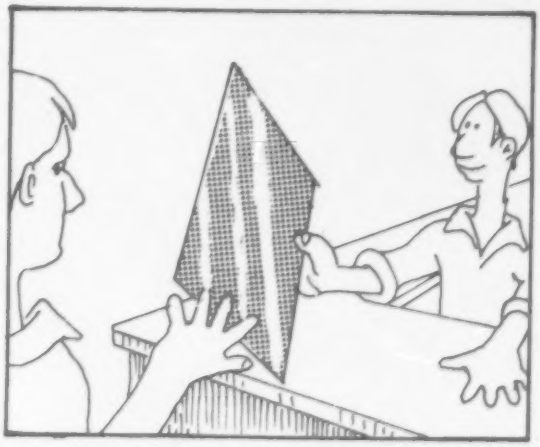
STEP 1 – Go to the layout area.



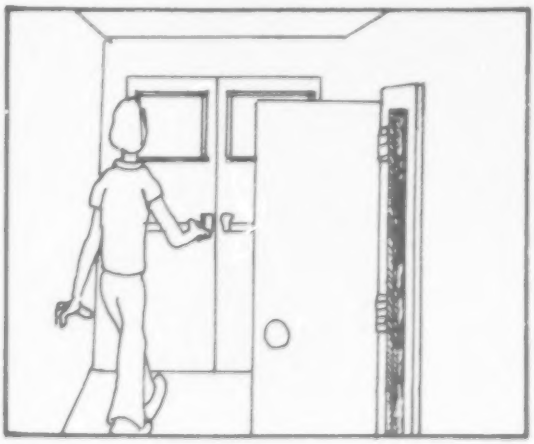
STEP 2 – Instruct the drafter(s) to go to the tool clerk and obtain the equipment and tools they will need.



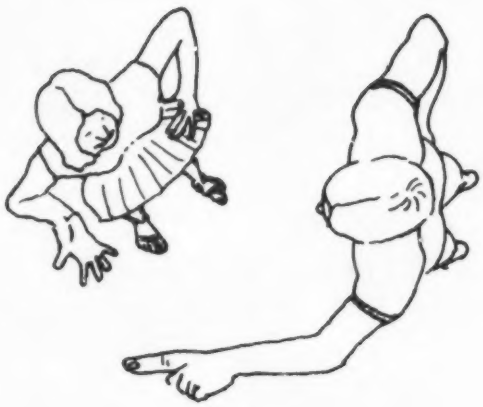
STEP 3 – Go to the fabricating area.



STEP 4 – Instruct the mechanic(s) and helper(s) to obtain their equipment and tools from the tool clerk.



STEP 5 – Go to the painting area.



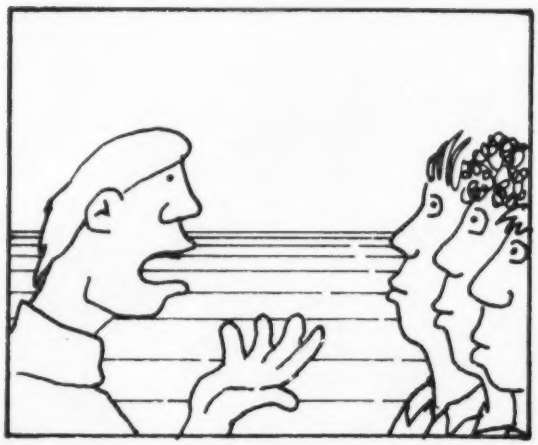
STEP 6 — Instruct the painter(s) to obtain their equipment and tools from the tool clerk.

Check Point

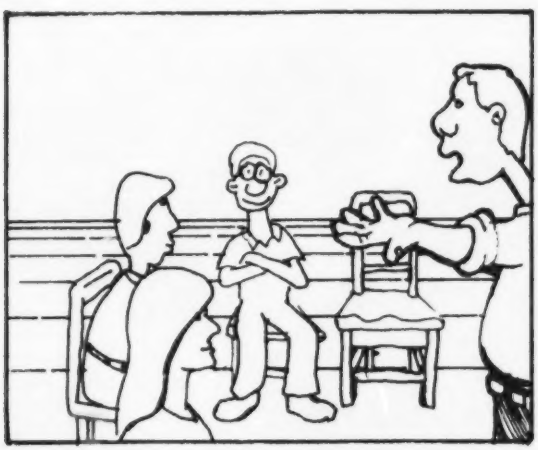
Recheck tools for proper amount before starting work.

Instructional Objective IV

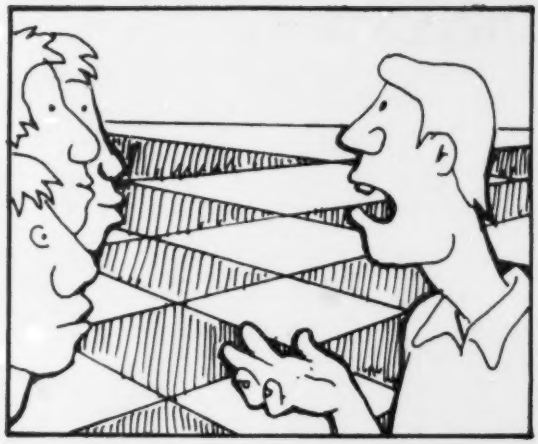
The student will instruct the group as to the number of kits to be made and have each group secure the necessary materials from the order/supply clerk or deliveryperson.



STEP 1 — After everyone has obtained the necessary equipment and tools, instruct them as to the number of kits to be produced.



STEP 2 — Instruct all groups to secure the necessary materials from the order clerk or deliveryperson.



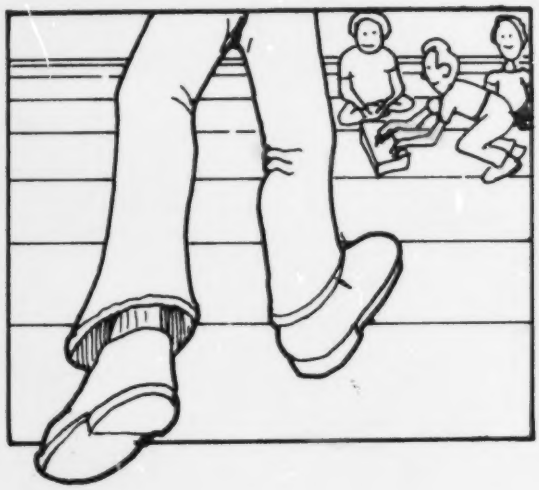
STEP 3 – Tell the group to begin work.

Check Point

Walk around the room because many of the workers will ask for assistance.

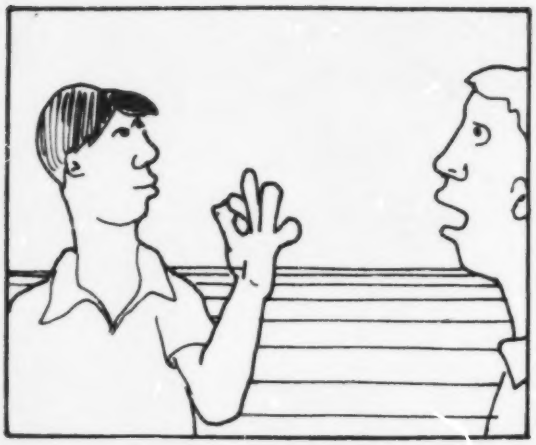
Instructional Objective V

The student will supervise all activities.

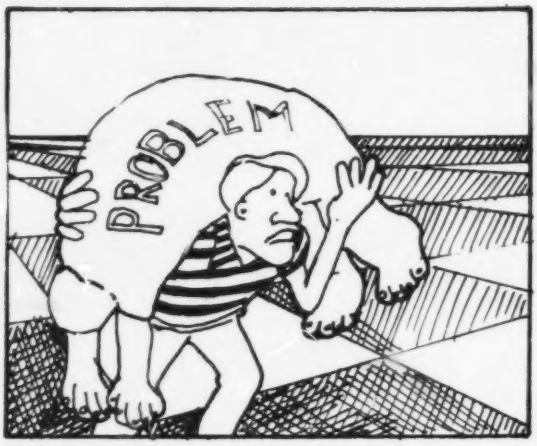


STEP 1 – After the activity begins, visit each work area.

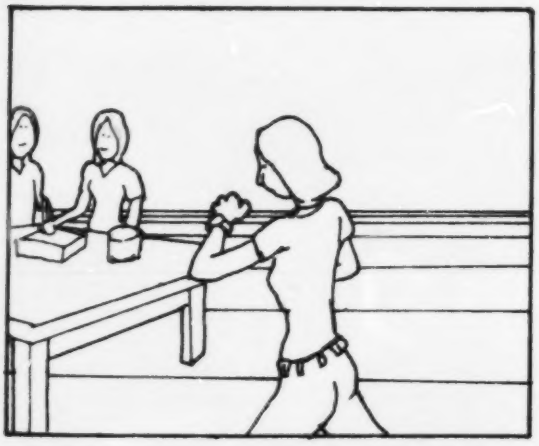
STEP 2 – Check with each student to see if he/she understands the assignment.



STEP 3 – Explain where necessary.



STEP 4 – Refer problems that you cannot handle to the teacher.



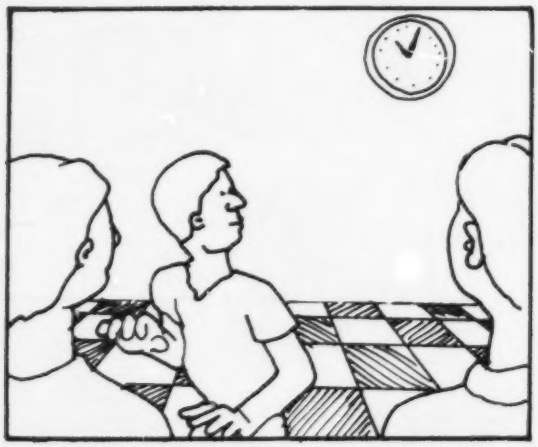
STEP 5 – Visit each group as often as time allows.

Check Point

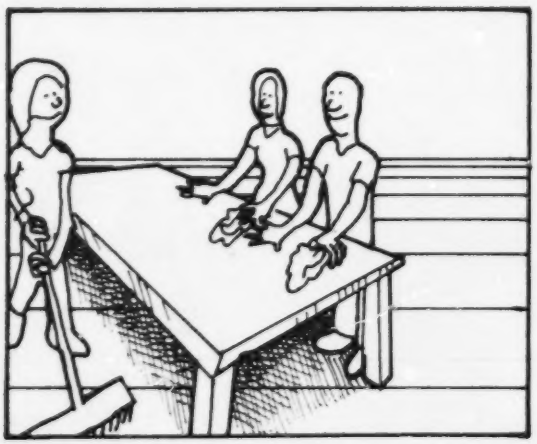
Report the progress of the groups to the teacher 2-3 times an hour.

Instructional Objective VI

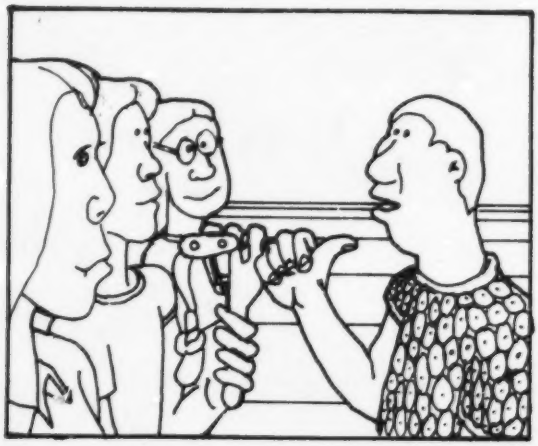
The student will supervise the work period.



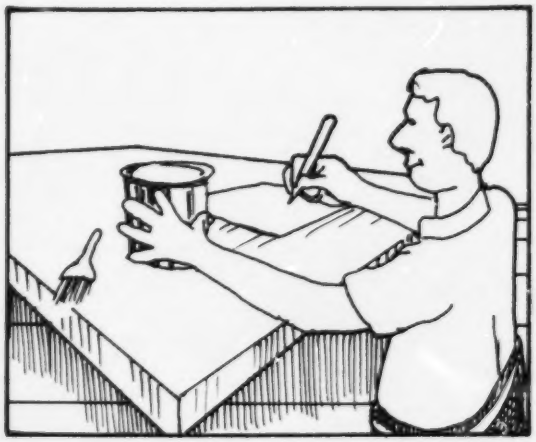
STEP 1 – Keep a check on the time, either through the teacher or a class clock.



STEP 2 – Ten minutes before the end of class, announce clean-up time.



STEP 3 – Instruct all students to turn in tools, equipment.



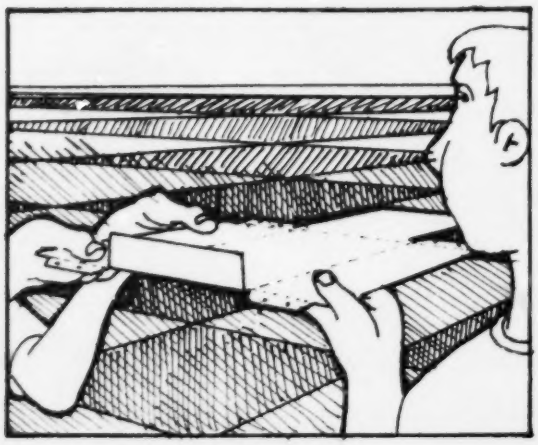
STEP 4 – Check to ensure all equipment is turned in.

Check Point

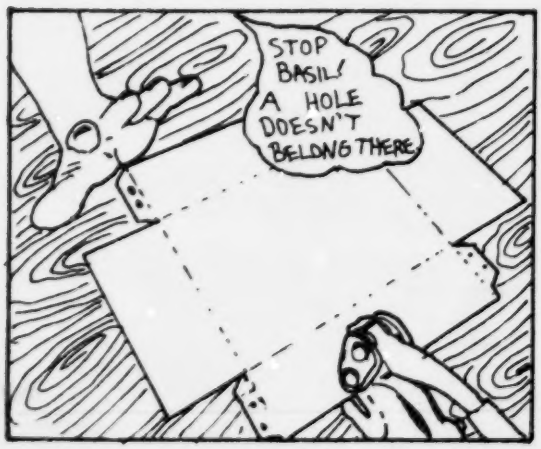
Report to the teacher when everything is turned in.

Instructional Objective VII

The student will inspect each step of the fabrication activity.



STEP 1 – When the students complete a step, the supervisor will inspect the progress.



STEP 2 – If there is an error in the process, point this out to the worker.

STEP 3 – When the project is correct, give the go-ahead.

Check Point

Consult with your instructor to ensure quality control.

922.687-058 LABORER, STORES (any ind.) order picker; parts picker; stock selector; warehouse worker.

Performs any combination of following tasks to receive, store, and distribute material, tools, equipment, and products within establishments: Reads production schedule, customer order, work order, shipping order or requisition to determine items to be moved, gathered, or distributed. Conveys materials and items from receiving or production areas to storage or to other designated areas by hand, handtruck, or electric handtruck. Sorts and places materials or items on racks, shelves, or in bins according to predetermined sequence, such as size, type, style, color, or product code. Sorts and stores perishable goods in refrigerated rooms. Fills requisitions, work orders, or requests for materials, tools, or other stock items and distributes items to production workers or assembly line. Assembles customer orders from stock and places orders on pallets or shelves, or conveys orders to packing station or shipping department. Marks materials with identifying information, using stencil, crayon, or other marking device. Opens bales, crates, and other containers, using handtools. Records amount of materials or items received or distributed. Weighs or counts items for distribution within plant to insure conformance to company standards. Arranges stock parts in specified sequence for assembly by other workers. May prepare parcels for mailing. May maintain inventory records. May restock aircraft commissary supplies, such as linens, glasses, emergency kits, and beverages and be designated COMMISSARY AGENT (air trans.). May be known according to specific duty performed as CLOTH-BIN PACKER (textile); COOLER WORKER (dairy prod.); ORDER FILLER (any ind.); PRODUCE CLERK (ret. tr.)II; TOOL CHASER (any ind.).

920.132-010 PACKAGING SUPERVISOR (any ind.)

Supervises and coordinates activities of workers engaged in packaging products and materials for storage or shipment: Studies production order to ascertain type and quantity of product, containers to be used, and other packaging requirements. Inspects products prior to packaging and returns rejected products to production departments. Observes packaging operations and inspects containers to verify conformance to specifications. Starts, adjusts, and repairs packaging machinery, or notifies maintenance department. Trains workers in operation of equipment. Requisitions containers and other supplies for delivery to work stations. Performs other duties as described under SUPERVISOR (any ind.). May be designated according to type of container filled as BARREL FILLER, HEAD (any ind.); BOTTLING SUPERVISOR (any ind.); CAN SUPERVISOR (any ind.).

740.684-022 PAINTER, BRUSH (any ind.) painter, hand.

Brushes paint, lacquer, rustproofing agent, or other coating onto metal, woodstock, or fabricated items, using brush: Places workpiece on bench, stanchion, or floor. Cleans surfaces, using hand scraper, wire brush, sandpaper, or turpentine. Pours desired amount of thinner into paint. Paints articles, using brush. Cleans brushes and floor, using solvent or soap and water. May transfer items to and from work area, using hoist or handtruck. May be designated according to article painted as LAST-CODE STRIPER (lasts & rel. forms); PAINTER, DRUM (any ind.); PAINTER, MANNEQUIN (model & pattern); PIPE COATER (iron & steel); or according to coating applied as JAPANNER (any ind.); LACQUERER (mach. shop); CAR VARNISHER (loco. & car bldg. & rep.).

222.367-062 TOOL-CRIB ATTENDANT (clerical) tool clerk.

Receives, stores, and issues handtools, machine tools, dies, and equipment, such as measuring devices in industrial establishment: Keeps records of tools issued to and returned by workers. Searches for lost or misplaced tools. Prepares periodic inventory or keeps perpetual inventory and requisitions stock as needed. Unpacks and stores new equipment. Visually inspects tools or measures with micrometer for wear or defects and reports damaged and worn-out equipment to superiors. May coat tools with grease or other preservative, using brush or

spray gun. May make minor tool repairs. May carry or deliver tools by handtruck to workers. May attach identification tags or engrave identifying information on tools and equipment, using electric marking tool. May be designated according to item stored as DIE-STORAGE CLERK (clerical).

906.683-022 TRUCK DRIVER, LIGHT (any ind.)

Drives truck with capacity under 3 tons to transport materials in liquid or packaged form and personnel to and from specified destinations, such as railroad stations, plants, residences, offices, or within industrial yards. Verifies load against shipping papers. Drives truck to destination, applying knowledge of commercial driving regulations and roads in area. Prepares receipts for load picked up. Collects payment for goods delivered and for delivery charges. May maintain truck log according to state and federal regulations. May maintain telephone or radio contact with supervisor to receive delivery instructions. May drive truck equipped with public address system through city streets to broadcast announcements over system for advertising or publicity purposes. May load and unload truck. May inspect truck equipment and supplies, such as tires, lights, brakes, gas, oil, and water. May perform emergency roadside repairs, such as changing tires, installing light bulbs, fuses, tire chains, and spark plugs. May be designated according to type of activity as CREW-TRUCK DRIVER (any ind.); INSECT SPRAYER, MOBILE UNIT (gov. ser.); MAIL-TRUCK DRIVER (any ind.); MOTOR-VEHICLE-ESCORT DRIVER (bus. ser.); PICK-UP DRIVER (motor trans.); SERVICE-PARTS DRIVER (auto. ser.); SPRINKLER-TRUCK DRIVER (any ind.).

804.281-010 SHEET-METAL WORKER (any ind.) sheet-metal mechanic.

Fabricates, assembles, installs, and repairs sheet metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace casings, according to job order or blueprints: Selects gage and type of sheet metal according to product being fabricated and knowledge of metal. Locates and marks dimension and reference lines on metal sheet [SHEET-METAL LAY-OUT WORKER (any ind.)]. Sets up and operates fabricating machines, such as shears, brakes, bending rolls, and punch and drill presses to cut, bend, and straighten sheet metal. Shapes metal over anvils, blocks, or forms, using hammer. Sets up and operates soldering and welding equipment to join together sheet metal parts. Smooths seams, joints, or burred surfaces, using files and portable grinder or buffer. Installs assemblies in plant or worksite according to blueprint specifications, using handtools and portable power tools. Inspects assemblies and installation for conformance with specifications, using measuring instruments, such as calipers, scales, and micrometer. May be designated according to type of metal used as COPPERSMITH (any ind.); TINSMITH (any ind.); or according to type of activity as FABRICATOR, SPECIAL ITEMS (any ind.); MODEL MAKER, SHEET METAL (any ind.) PRODUCT-DEVELOPMENT WORKER (any ind.); ROOFER, METAL (const.); SHEET-METAL INSTALLER (any ind.); SHEET-METAL WORKER, MAINTENANCE (any ind.); SHOP MECHANIC (any ind.).

804.281-014 SHEET-METAL WORKER APPRENTICE (any ind.)

Performs duties as described under APPRENTICE (any ind.). Frequently specializes, after completing apprenticeship program, in such areas as ventilation and air-conditioning, restaurant equipment, architectural sheet metal work, warm-air heating systems, sheet metal roofing, and electric-sign construction.